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ABSTRACT

The booklet describes research since 1975 performed in Japan to determine the effects of radio and television broadcasts on handicapped children. Introductory materials review the history of special education in Japan and the role of broadcasting for handicapped people and in special education in Japan. A survey depicts the extent of broadcast equipment (audiovisual aids) and instructional programs in Japanese special education programs. Report of an investigation follows in which 25 mentally retarded 4th to 6th graders were asked to view a videotape recording. Descriptions of two classroom studies address the use of television to begin and conclude classroom lessons and the use of television science programs in junior high. A concluding section summarizes findings and discusses future projects. (CL)

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Radio and Television's Role in the Education of Handicapped Children in Japan

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JAPAN RADIO-TV EDUCATION ASSOCIATION

Radio and Television's Role in the Education of Handicapped Children in Japan

EC 15 10 30

JAPAN RADIO-TV EDUCATION ASSOCIATION

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by
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The designs on the cover and on the title page of this booklet are a 'typed art' done by Kōryu Itō (a seriously handicapped person) with an electric typewriter.

Foreword

Ever since its establishment in 1948 the Japan Radio-TV Education Association, a foundation, has steadily been engaged in study and research on theories and practical methods concerning the use of radio and television broadcasting in educating the people. It is the only organization of its kind in Japan. Especially since 1975, a project team was set up within the Association to specialize in study and research on a single subject—"Promotion of the Education for Handicapped Children by Effective Use of Broadcasting." In carrying on this project, the Association has been fortunate enough to be provided with the necessary funds from the Japan Shipbuilding Industry Foundation who so generously offered to supply this Association with funds gained through its sponsorship of public motorboat races.

These studies and research, since 1975, have been carried on by the Association with assistance from the Study Group on the Cognition of Video Images by Handicapped Children (Chairman: Prof. Shigeo Ōuchi), the All-Japan Teachers' Society for Studying the Use of Radio and Television in Special Education comprising educators from special education schools throughout the country, and other members of the Association. The results of studies have each year been compiled into a book for use as reference material by those leaders specializing in such special education.

While the results of such studies and research have hitherto been published in book form primarily for the benefit of those concerned within the country, the Association in 1981 decided to translate into English a part of the results of the 36-year studies, in commemoration of the United Nations' International Year of Disabled Persons which marked the start of the world-wide cam-

paign to promote the welfare of handicapped people. It is with our earnest hope of assisting in the promotion of education of handicapped children that we are publishing this English booklet and we would certainly be happy if the information contained herein about our studies and activities will be of some help to you in your studies in the same or similar fields.

Last but not least, may we express our heartfelt thanks to everyone who has given his or her time to help in the compilation of this booklet.

Michio Nagahama
General Director
Japan Radio-TV Education Association

Preface

Shigeo Ōuchi
Professor, The University
of Tsukuba

It was in spring, 1975, that our research project "Promotion of the Education for Handicapped Children by Effective Use of Broadcasting (*Hōsō-riyō riyoru Tokushu-kyōiku no Shinkō*, abbreviated to *Hō-Toku-Shin*)" was launched with Professor Shigeo Ōuchi as a representative. This project aimed at elucidating the role of educational broadcasting programs in the effective teaching of handicapped children of all kinds, solving a variety of problems which are posed both in the production of suitable programs for the handicapped and in the effective use of any educational program for those children, formulating some policies for the improvement of production and use of educational programs for handicapped children, and thus contributing to the advancement of special education in Japan.

Our research group consists not only of a few professional researchers but also of many school teachers and principals who are also enthusiastic about scientific research work. This may be a unique character of the *Hō-Toku-Shin* group. The project group consisted of twenty members at the outset, but the number of joint researchers has remarkably increased for the past six years, now amounting to more than forty. Among these members are three professors in the University of Tsukuba, two chief researchers and a researcher in the National Institute of Special Education, a senior researcher in the NHK (Japan Broadcasting Corporation) Radio and Television Culture Research Institute, two supervisors

in the Tokyo Board of Education, three school principals and a vice-principal. All the other members are teachers of national or prefectural schools for the blind, the deaf, the mentally retarded, the crippled, and the invalid in Tokyo and its vicinities.

We have so far published six annual reports of our project research, and the seventh report is going to appear shortly. All of these are written in Japanese. Only the table of contents of these six reports will be translated into English, as follows:

EDUCATION FOR HANDICAPPED CHILDREN AND USE OF RADIO AND TELEVISION (Series)

Volume 1. (March, 1976)

I. Radio and Television in Education for Handicapped Children
   1. Significance of Radio and Television Education
   2. Problems and Methods of Research in Radio and Television Education
   3. History of Research in Radio and Television Education
   4. Production of Broadcasting Programs for Handicapped Children

II. Visually Handicapped Children and Radio and Television Education
   1. Peculiar properties in Image-cognition
   2. Present Conditions in the Use of Radio and Television
   3. Some Problems in the Use of Radio and Television
   4. Practice in the Use of Radio and Television
   5. Report of School Visit

III. Hearing-impaired Children and Radio and Television Education
   (Sections 1~5 are the same as above.)

IV. Crippled Children and Radio and Television Education
   (Sections 1~5 are the same as above.)

V. Mentally Retarded Children and Radio and Television Education
   (Sections 1~5 are the same as above.)

VI. Discussion on the Use of Radio and Television in Education for Handicapped Children--Its Present and Future.

Appendices

1. Outline of the Questionnaire
2. Outline of the Workshops
3. References

Volume 2. (March, 1977)

Part 1. Researches

I. Radio and Television Media in the Education for Handicapped Children

II. Content and Method of Survey on the Use of Radio and Television

III. Analysis of the Survey on the Use of School Broadcasting Programs

1. Analysis of the Questionnaire
2. Field Survey of Schools

IV. Experimental Study on the Peculiar Properties of Image-cognition in Handicapped Children

V. Experimental Study on the Production of Video-tape materials

Part 2. Practical Studies

I. General Comments on the Use of Radio and Television

II. Use of Educational Programs for the Visually Handicapped

1. Merit and Role of Radio and Television Media
2. Selection and Use of Programs
3. Utilizing Facilities and Equipment
4. Practice of Classroom Teaching

III. Use of Educational Programs for the Hearing-impaired

(Sections 1~4 are the same as above)

* Part of this section 4 (Using TV Science Program in the 3rd Grade of the Junior High Division, the Yamagata Prefectural School for the Deaf) is translated into English and included in this booklet on pages 101~108.

IV. Use of Educational Programs for the Mentally Retarded

(Sections 1~4 are the same as above.)

V. Use of Educational Programs for the Crippled

(Sections 1~4 are the same as above.)

VI. Use of Educational Programs for the Invalid
(Sections 1~4 are the same as above.)
VII. NHK Producers Answer to Some Questions on the Production of Programs for the Handicapped
Appendices
1. Outline of the Workshops
2. References
3. List of NHK Radio and Television Programs for the Handicapped

Volume 3. (March, 1978)

I. Radio and Television Media and the Lower Grades Handicapped Children of the Elementary Division
II. How Radio and Television Programs are Used in the Lower Grades—Results of Survey on the Use of School Broadcasting
1. Survey on the Use of School Broadcasting
2. Results in Education for the Visually Handicapped
3. Results in Education for the Hearing-impaired
4. Results in Education for the Mentally Retarded
5. Results in Education for the Crippled
III. Use of Television Programs for Lower Grades Visually Handicapped Children
1. Developmental Characteristics and TV Programs
2. Use of TV Programs in Classroom Teaching
Case 1—Use of a Science Program for the First Grade Science Class
Case 2—Use of a Science Program for the Third Grade Science Class
IV. Use of Television Programs for Lower Grades Hearing-impaired Children
1. Developmental Characteristics and TV Programs
2. Use of TV Programs in Classroom Teaching
Case 1—Use of an Infant Program for General Learning in the First Grade of Elementary Division
Case 2—Use of a Science Program for Science Learning in the First Grade of Elementary Division
V. Use of Television Programs for Lower Grades Mentally Re-

tarded Children
1. Developmental Characteristics and TV Programs
2. Use of TV Programs in Classroom Teaching
Case 1—Use of a Special Class Program for Arithmetic Teaching in the First Grade
Case 2—Use of a Special Class Program for Life Adjustment Guidance in the Lower Grades
VI. Use of Television Programs for Lower Grades Crippled Children
1. Developmental Characteristics and TV Programs
2. Use of TV Programs in Classroom Teaching
Case 1—Use of a Language Program for Language Teaching in the Second Grade
Case 2—Use of a Special Class Program for Discrimination Learning in the Multi-handicapped Class
VII. Use of Television Programs for Lower Grades Invalid Children
1. Developmental Characteristics and TV Programs
2. Use of TV Programs in Classroom Teaching
Case 1—Use of Social Studies Program, Moral Education Program and Science Program
Case 2—Use of a Music Program for Combined Music Class in the Lower Grades
VIII. Experimental Study in the Production of Video-taped Teaching Materials
1. Aims and Significance of Self-production
2. Plan and Method of Experiment
3. Results of Experiment in the Lower Grades and Comments
4. Prospects for Future Study
IX. Production of NHK Special Class Program "Joyful Classroom (*Tanoshii Kyōshitsu*)"
X. Discussion on the Teaching of Lower Grades Children with the Use of Television
Appendices
1. Outline of the Workshops
2. List of NHK Programs Related to Education and Welfare for the Handicapped

Volume 4. (March, 1979)

I. Problems in Education for Handicapped Children and the Use of TV and Video Media
   1. Some Problems in Education for the Handicapped
   2. Why Should We Use TV and Video Media in the Education for Handicapped Children?

II. Studies of Classroom Teaching with the Use of TV and Video Media
   1. Meaning of the Studies of Classroom Teaching
   2. Visually Handicapped: Social Studies Teaching with the Use of TV
   3. Hearing-impaired: Teaching Young Children with the Use of Video-taped Programs
   4. Mentally Retarded: Use of TV Programs in Introductory and Concluding Stages of Teaching
      * This Study is translated into English and included in this booklet on pages 71～100.
   5. Crippled: Teaching of Morals with the Use of TV
   6. Invalid: TV Program Provides a Common Ground for Mother-Child Communication

III. Experimental Study on the Production of Video-taped Teaching Materials
   1. Study Process and its Significance
   2. Plan and Method of Experiment
   3. Results of Experiment and Comments

IV. Case Studies in School Facilities and Equipment and Their Use
   1. Survey of Representative Schools
   2. Visually Handicapped: Present State of Using TV Programs in Tokushima Prefectural School for the Blind
   3. Hearing-impaired: Practice of TV Education in Gifu Prefectural School for the Deaf
   4. Mentally Retarded: Use of TV System in Aichi Prefectural Haruhidai Nursing School
   5. Crippled: Utilization of Closed Circuit TV in Hyōgo Prefectural Nojigiku Nursing School

6. Invalid: Bedside Teaching and CCTV in Yamaguchi Prefectural Toyoura Nursing School

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1. Outline of the Workshops
2. List of Experimental Schools and Awarded Reports Related to Special Education

Volume 5. (March, 1980)

I. What is Meant by Audiovisual Materials?
   1. Revised Course of Study and Audiovisual Materials
   2. Definition of Audiovisual Materials as seen in Teachers' Manuals Published by the Ministry of Education
   3. My Own Idea of What Audiovisual Materials are

II. Some Properties of Cognitive Process with Visual Media
   1. Two Modes of Thinking in Image-cognition
   2. Psychological Basis for Real-time / Whole / Serial Use of Programs
   3. Image-cognition Model
   4. Problem of Super-imposed Subtitles
   5. Evaluation

III. Some Problems of Image-cognition in Handicapped Children
   1. Profoundly Handicapped Children and Television
   2. Basic Study for the Production of Experimental Video Materials
   3. Method of Measuring the Viewing Effect of TV in Mentally Retarded Children

IV. Use of Television Programs in Classroom Teaching
   1. Visually Handicapped: Social Studies Teaching with the Use of Television
   2. Hearing-impaired: Science Teaching with the Use of Television
   3. Mentally Retarded: Introducing TV Programs into Classroom Teaching
   4. Crippled: Classroom Teaching by Means of Teacher-made Video Materials
   5. Invalid: Effective Teaching Method for Children undergoing dialysis

V. Survey on the Use of Television Programs in Special Classes for the Mentally Retarded and for the Emotionally Disturbed

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1. Outline of the Workshops
2. List of Experimental Schools and their Subjects of Study

Volume 6. (March, 1981)

I. Role of Educational Programs in the Education for Handicapped Children
   1. Significance of Educational Programs and what they should be
   2. Actual Production of Programs for the Handicapped and Some Problems to be Solved

II. Characteristics of Image-cognition in Handicapped Children
   1. Experimental Study on the Production of Video Program and its Viewing Effect
      * This study is translated into English and included in this booklet on pages 51～69.
   2. Trial Program for Developing Image-cognition Ability in Cerebral Palsy Children

III. Classroom Teaching with the Use of Television
   1. Visually Handicapped: Teaching Morals with the Use of TV
   2. Hearing-impaired: Teaching Science by a TV Program with Subtitles Super-imposed by a Classroom Teacher
   3. Crippled: Use of TV in Teaching Life
   4. Invalid: Teaching Science with the Use of TV

IV. Study of Classroom Teaching
   1. Teaching Lower Grades Mentally Retarded Children in a Special Class with the Use of Infant Programs
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V. Survey on the Use of School Broadcasting Programs in the Education for Handicapped Children

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2. List of Experimental Schools

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I. Introduction

1. History and Present Situation of Education for the Handicapped in Japan

Akira Okada, Professor,
The University of Tsukuba

After the opening of her doors to the West in 1860s Japan took a great deal of new knowledge and skills from the advanced countries of the West. Included in those stocks of information were unexpectedly large amount that concerned the so-called special education—education of the handicapped. Yukichi Fukuzawa made great efforts to enlighten the Japanese people about the progress made in Europe in the field of education of the blind, the mute and the mentally retarded through his famous book *Seiyō Jijō* (The Situation in the West). Generally speaking, however, the first step in Japan's special education is said to have been taken when the Kyoto School for the Blind and Mute was established in 1878. At this institution Tashirō Furukawa and his colleagues made a successful attempt at teaching numerals and letters to the handicapped by using specially devised methods.

In 1880 the Braille method of writing was adapted to Japanese letters, and in 1897 the oral method was introduced to teach the hard-of-hearing children inspired mainly by the visit of G. Bell to Japan in the same year. In 1890 a "class for the repeaters" was established at Matsumoto Elementary School in Nagano Prefecture, followed by the inauguration in 1896 of Takinogawa Gakuen, a school for the mentally retarded children established by Ryōichi Ishii. We shall trace the development of education of the handicapped in each of its specialized fields.

1. Education of the Blind and the Deaf

According to records there was only one school for the blind and the deaf in 1878, but the figure increased to 57 in 1912 due mainly to promulgation of the Revised Ordinance on Elementary Schools in October, 1890, that included stipulations, for the first time in Japan's history, concerning establishment and abolition of schools for the blind and the deaf. In the Ministry of Education Ordinance made public in November of the following year stipulations were laid down concerning qualifications of teachers, their appointment and dismissal, and rules of teaching, thus clarifying the foundation of system and organization of schools for the handicapped.

In teaching blind children initial efforts were concentrated on how to get them to touch read the ordinary letters and characters. Later, however, inspired by the invention in France of Braille letters, Kuraji Ishikawa and others at the Tokyo School for the Blind and the Mute made painstaking efforts in devising the Japanese counterpart and finally produced unique raised-type letters of our own in 1890.

As for education of the deaf the generally accepted method in both the East and the West is to utilize hand gestures which the deaf people have intrinsically developed; Japan was no exception. With the introduction to Japan of the oral method from the West there followed a period of heated controversy—some advocating the oral method, some others the manual method, and still some others calling for combination of the two. Since 1926, however, the oral method which was strongly supported by Unosuke Kawamoto and his followers came gradually to gain predominance.

Subsequently, there arose strong arguments calling for separation of education of the blind and education of the deaf, and the Tokyo School for the Blind was established in 1909 followed by the Tokyo School for the Deaf and Mute in 1910. The new trend did not spread to other localities until 1923 when an imperial edict

entitled "Ordinance on the Schools for the Blind, Deaf and Mute" was promulgated. It was soon followed by the institution of "Regulations covering Public and Private Schools for the Blind, Deaf and Mute" which was based on the above edict. Promulgation of these two laws marked the institutional separation of education of the blind and education of the deaf and mute in Japan, whereas it had been combined in one system theretofore. Aims and objectives of respective schools were drawn up separately and each prefecture was obligated to establish these two kinds of schools in its jurisdiction, bearing the financial burden as well.

2. Education of the Mentally Retarded

Compared with education of the blind and the deaf, schools for children with other handicaps had a very late start and its development also was very slow. It was social welfare institutions, rather than schools, that exhibited greater interest in this field and they had more extensive programs for the mentaliy handicapped. Among them Takinogawa Gakuen, Shirakawa Gakuen, Tōka-juku and Fujikura Gakuen are more well-known. Although these institutions were not classified as schools, they did their best to teach in their own ways.

As we mentioned above, the first authentic school for the mentally retarded was the "class for the repeaters" which opened at Matsumoto Elementary School in Nagano Prefecture in 1890. In the following year Tatebayashi Elementary School in Gumma Prefecture followed suit by establishing a "class for the slow learners," and these two pioneering efforts marked the beginning of education of the mentally handicapped in Japan. By 1907 there were "special classes" at elementally schools attached to the four normal schools in the country. The class at the elementary school attached to the Tokyo Higher Normal School has somehow gone out of existence in the course of time. During the 1910s, in an atmosphere of the so-called "Taishō (era) Democracy" atten-

tion was turned to the handicapped and the classes for the mentally retarded increased. In 1931 there were 3,063 children enrolled in 100 special classes at 71 schools throughout the country. The trend was, however, reversed in the wartime 1940s.

3. Education of the Invalid and the Physically Handicapped

Special education in Japan had developed first in the field of education of the blind, deaf, and mentally retarded. It was not until the Taishō and Shōwa eras that attention was given to the education of the physically handicapped and invalid, which together comprise Japan's special education today.

Need for rehabilitation and education of the physically handicapped arose first from the standpoint of orthopedics. Around 1918 Kenji Takagi envisioned a school-clinic where children with physical handicaps could come to get medical treatment at the same time receiving classroom instructions so that they might acquire vocational training that would enable them to support themselves in society. It was his dream to materialize such a school-clinic. So the concern for the education of the physically handicapped children did exist as early as the late 1910s, but it was only in 1932 that the physically handicapped children received professional attention separate from the physically invalid. It was then the city of Tokyo established the Municipal Kōmei School for the Physically Handicapped. Through the prewar and wartime periods, it was the only school for the physically handicapped children in Japan.

Development in education of the physically invalid children may be considered in connection with the measures to counter the spread of tuberculosis. Japan's war with China and with Russia during the Meiji era made the Japanese people keenly aware of the need for improvement in physique in developing national strength. The people's health was, however, threatened by the spread of tuberculosis that accompanied industrial develop-

ment and urbanization. People's health in general, prevention of tuberculosis in the youth in particular, became the nation's primary concern and task. It was under such circumstances that interest in the special care and education of the physically invalid came to receive broad attention rapidly.

One of the earliest institutions is the Chigasaki Camping School established by the Hakujūji Corporate Society in 1917. Since 1921 elementary schools in major cities came to provide "nursing classes" for the invalid children who required special attention. By 1934 there were 8,028 children enrolled in 146 such classes throughout the country.

4. Special Education Since World War II

The postwar School Education Law of Japan provided for establishment of three kinds of schools for the mentally and physically handicapped children—the school for the blind, the school for the deaf and the so-called nursing school. Of these, schools for the blind and schools for the deaf have existed since prewar days, but the nursing school was something quite unheard of, the education of children with mental or physical handicaps. All these schools consisted of kindergarten, elementary school, junior and senior high schools. Elementary and junior high school education was made compulsory in principle. It was also made possible for special classes to be accommodated in ordinary elementary or junior high schools.

In an administrative step, the Special Education Section was established in 1952 within the Elementary and Secondary Education Bureau of the Ministry of Education.

Further progress in the education of the handicapped was achieved in 1956 when a Law on the Special Measures to Accelerate the Establishment of Public Nursing Schools came into existence. This law enabled the nursing school, which was still not completely compulsory, to receive, so long as it was a public

school, the state funds for its facilities, teachers' salaries and teaching materials just as other public schools that conduct compulsory education. Consequently the law served greatly to stimulate establishment of nursing schools throughout the country, and the nursing school was made completely compulsory in 1979.

According to the 1977 statistics there were in Japan 76 schools for the blind, 107 schools for the deaf, 244 nursing schools for the mentally retarded, 132 nursing schools for the physically handicapped and 78 nursing schools for the invalid. And for the special classes there were 14,129 classes in ordinary elementary schools and 7,196 classes in ordinary junior high schools.

2. Present State of Broadcasting Programs for Handicapped People in Japan

Takashirō Akiyama, Senior Researcher,
NHK Radio and Television Culture
Research Institute

The broadcasting system in Japan is made up of a public broadcaster and commercial broadcasters.

The public broadcaster is the Japan Broadcasting Corporation (NHK) which has two color television channels, two radio channels and an FM channel broadcasting over a nationwide network. Receiving fees constitute its source of revenue. It is independent from both the government and commercial sponsors. NHK was established in 1925. The first commercial broadcaster was born in 1953. There are five TV channels by such broadcasters in the Tokyo area at present. All operate on revenue from commercials. Virtually all of the radio and television programs for the handicapped are broadcast by NHK. NHK's radio and television networks cover 99 percent of Japan's total area. As 98 percent of Japanese households have television, the Japanese people have access to both television and radio programs for the handicapped wherever they live in the country.

The following are the programs for the mentally and physically handicapped which NHK broadcasts over its nationwide network (as of 1982). These programs are broadcast as a series once or twice a week for an entire year starting in April.

Programs for and about handicapped people

With Mentally, Physically Handicapped Children	NHK Educational TV	(Fri) 8:30— 9:00 (Mon) 17:00—17:30 (repeat)

Classroom to Correct Speech Disorders	NHK Educational TV	(Fri) 15:35—16:05 (Sat) 8:30— 9:00 (repeat)
Joyful Classroom (for mentally retarded children, primary school lower grades)	〃	(Mon) 9:30— 9:45 (Wed) 9:45—10:00 (repeat) (Fri) 10:15—10:30 (repeat)
Joyful Classroom (for mentally retarded children, primary school upper grades)	〃	(Tue) 9:30— 9:45 (Wed) 9:45—10:00 (repeat) (Sat) 10:15—10:30 (repeat)
Welfare Era	〃	(Fri) 18:00—18:30 (Sat) 12:30—13:00 (repeat)
For the Deaf	〃	(Sun) 18:40—19:00
With Mentally, Physically Handicapped Children	NHK Radio 2	(Sun) 19:00—19:30 (Sun) 8:00— 8:30 (repeat)
For the Blind	〃	(Sat) 13:30—14:40 (Sun) 9:30—10:00 (repeat)

Television Program Series

" With Mentally, Physically Handicapped Children " ETV (Fri) 8:30— 9:00
(Mon) 17:00—17:30 (repeat)

Who It Covers and What Handicap

This program is intended for the parents of and others concerned with handicapped children up to 5 years of age. The main handicaps and number of programs broadcast in a year are as follows:

○ Deaf children 24

- Mentally retarded children 12
- Emotionally disturbed children 8
- Other handicapped children (blind, crippled) and/or common topics 8

Program Contents

The main contents are:

- Ways of raising, guiding at home
- Psychological and medical characteristics of handicapped children
- Topical subjects and experiences of seniors are expected to be taken up

These contents are divided weekly according to the handicap:

1st Week	For mentally retarded children
2nd, 3rd Weeks	For deaf children
4th Week	For emotionally disturbed children
	Common to other handicapped children, others
5th Week	Common to other handicapped children, others

Purpose of Program

This program is planned for the parents of children with mentally or physically handicapped children. The early therapy for and education of handicapped children is, of course, desirable.

Therefore, this program provides practical ways of raising and guidance at home for parents of handicapped children up to 5 years of age. Considering that handicapped children are increasing among lower age groups, efforts are being made to put the emphasis on children up to 3 years of age and to take up problems common to various handicaps and ways of guidance.

"Classroom to Correct Speech Disorders" ETV (Fri) 15:35—16:05
(Sat) 8:30— 9:00 (repeat)

Purpose of Program

There are various kinds of speech disorders. In general these are:

1) Abnormal pronunciation
2) Abnormal voice
3) Stuttering
4) Retardation in learning to speak
5) Speech defects due to harelip or cleft palate
6) Speech defects due to cerebral palsy
7) Speech defects due to hearing difficulty

These speech disorders affect five out of every 100 children, and it is estimated that there are about 1,400,000 such children throughout Japan.

This program shows, in an easily understandable manner, speech guidance for families with such children and especially for the mothers.

A series of four programs are made covering "retardation in learning to speak," "stuttering," "abnormal pronunciation" and "hearing difficulty." The most desirable approach in each area is introduced.

Mothers and their children are invited to the studio where professional experts listen to their problems and give speech guidance. Basic knowledge on speech defects is taught.

The activities of the "Association of Mothers of Children With Speech Disorders" are also introduced. So are the activities of the educational administrative agencies taken up for discussion.

This television program is not confined to speech guidance but is also intended to give a wider picture of the problem of speech disorder to the viewers. It is intended to show mothers the desirable approach and handling of their children in order to contribute to the relations between mother and child.

Examples of Program Content 1981

Item	Theme
1. Common	Speech development
2. Stuttering	Why does the child stutter?
3. Development	What is speech?
4. Pronunciation	Why the inability to pronounce clearly?
5. Common	Teaching a child to speak
6. Hearing difficulty	Hearing and ability to speak words
7. Development	Birth of speech
8. Pronunciation	Ways to learn correct pronunciation
9. Common	Letters from mothers

"Joyful Classroom"
(For primary school, lower grades)

ETV (Mon) 9:30— 9:45
(Wed) 9:45—10:05 (repeat)
(Fri) 10:15—10:30 (repeat)

This program is intended for children in special classes of primary schools or in the lower grades in the primary school division of schools for mentally retarded children. It teaches the basics of figures and words, how to take care of oneself and a sense of rhythm. Handicraft is also taught. Songs, dances and animated pictures are used to arouse interest in learning among children previously not familiar with television classes.

Examples of content 1981

	Contents
1)	Regular participants are introduced, the child is taught to greet familiar people
2)	Child is taught his or her name and to answer when called
3)	Interest in colors is aroused, the child learns the different colors

4)	Child plays blowing or moving lips
5)	Interest is aroused in animals' cries and various sounds in everyday life

"Joyful Classroom" ETV (Tue) 9:30— 9:45
(For primary school, upper grades) (Thu) 9:45—10:00 (repeat)
(Sat) 10:15—10:30 (repeat)

This program is intended primarily for children in special classes of primary schools or in the upper grades in the primary school division of schools for mentally retarded children. It tries to assist their development and bringing out their potentialities. It teaches knowledge and communication through use of the body. Words and characters are taught to prepare the child for school admission.

Examples of content 1981

1)	Loosening up the entire body
2)	Calisthenics using parts of the body
3)	Calisthenics done with others' help
4)	Helping others' calisthenics
5)	Body-to-body communication

"Welfare Era" ETV (Fri) 18:00—18:30
(Fri) 12:30—13:00 (repeat)

Welfare expense accounts for over 20 percent of total expenditures of both the central and local governments in Japan. Social welfare is well institutionalized, making Japan one of the welfare states of the world. However, the education and job opportunities for handicapped people are still not sufficient. There are various problems to be solved in the area of welfare, including income security of the handicapped and coping with an aging society.

The program "Welfare Era" attempts to grasp the social

trends and examines the problems of the mentally and physically handicapped, the aged, children, mother-child families and other welfare questions.

" For the Deaf " ETV (Sun) 18:40—19:00

This series was started in April 1977 and uses sign language, lip reading, superimposed subtitles and various image materials (film, photo, picture) to provide necessary livelihood information to people (adults) with a hearing handicap and various topics of interest to and concerning these people, approximately 310,000 in Japan. Sign language guidance is also provided to contribute to dissemination of a common sign language among the hearing-impaired people in the entire country.

Radio Program Series

" With Mentally, Physically Handicapped Children " Radio 2 (Sun) 19:00—19:30
(Sun) 8:00— 8:30

Purpose of Program

This program takes up various problems (medical care, education, job) of concern to people with handicapped children, especially the mentally retarded. Underlying the program is the belief that the handicapped people should not be isolated from society but should be enabled to live together with ordinary people. What is necessary to make this possible? The program tries to give the answer.

" For the Blind " Radio 2 (Sat) 13:30—14:00
(Sun) 9:30—10:00 (repeat)

This radio series was started in 1964 and provides the necessary livelihood information for blind people as well as topics of interest to these people. There are by estimate 250,000 people

with sight handicaps throughout the country. In December 1979, the program was awarded the Health and Welfare Minister's citation on the occasion of the 30th anniversary of the Law for Welfare of the Physically Handicapped.

3. Development and Present State of Use of Broadcasting in Education of Handicapped People in Japan

Takashirō Akiyama

Outline

The use of radio in educating the mentally and physically handicapped persons in Japan was started in the mid-1930's. According to a nationwide survey conducted by the Ministry of Education in 1948, 56 percent of schools for the blind and the deaf were using the instructional radio programs of the Japan Broadcasting Corporation (NHK).

The Zempōren (All-Japan Teachers' Federation for Studying the Use of Radio and Television in Education) was established in 1950. As its name indicates, its purpose was to study the use of the broadcasting medium in school education and to convey the educational requirements to the broadcaster. Sub-committees for the education of the blind and the deaf were established at Zempōren's Ninth General Meeting in Tokyo in 1958. The teachers at the schools for the blind and the deaf discussed the use of radio and television instructional programs in educating blind and deaf children. Since then the two sub-committees are convened at the annual convention of Zempōren.

It was in 1954 that the radio instructional program was first used for mentally retarded children. K. Kojima used the radio programs "Japanese for Classroom" "Music for Classroom" and "Fairy Tales" to help improve the speaking ability and sense of rhythm of the children with IQs of 42-83. A sub-committee for education of mentally retarded children was established at Zempōren's 1959 annual convention, and the teachers discussed how to

enhance the effort to use radio and television instructional programs for these children.

It was also from around this time that the teachers discussed whether radio and television could be used in the education of crippled children. This was done in the classroom on a trial basis. The subject was first discussed and studied at Zempōren's 1963 annual convention.

This then is the early history, so to speak, of teaching the mentally and physically handicapped children in Japan by radio and television. There were as yet no broadcasting programs made especially for these children.

Following Kojima's study, other veteran teachers proved that radio and television could indeed be helpful in teaching the mentally retarded children, who showed active reaction when they listened to or watched these programs.

NHK listened to the opinions and wishes expressed by the teachers and used them in developing instructional television programs for these children. The first experimental TV program was made in 1962 and was shown to teachers specializing in the teaching of mentally retarded children at the Zempōren annual convention. The reaction of the teachers was favorable, although the need for some improvement was pointed out. Improving on this trial program, NHK started its weekly 30-minute TV series "Joyful Classroom" in April 1964. This was the first instructional TV program for mentally and physically handicapped children broadcast on a regular basis in Japan.

From 1965, two series of this program were broadcast weekly, the first for mentally retarded children, aged 6 to 8, and the second for those aged 9 to 11, for a total of 35×2 programs a year.

Use of Radio and Television at Schools for the Blind

It was in the teaching of blind people that the educational role of broadcasting was first noted. NHK provided radio sets free of

charge to the schools for the blind in 1932. By 1948, 87 percent of the nation's schools for the blind had radios and 56 percent utilized radio instructional programs. K. Ōba reported in 1962 that the radio science program, supplemented by by-touch explanatory models and inspection tours, proved helpful to the blind primary school children in their science studies.

In the 1970's, the radio programs for schools decreased whereas the television instructional programs increased. In the home, too, television gradually took over the role of providing news and educational instruction from radio.

In line with this social change, the schools for the blind shifted to greater use of television instructional programs. This may seem strange. How can the blind see television? It should be noted that there are relatively few among the blind children who are totally blind. More than half have some sight. A television set is provided to each or every two of these children, who watch the screen from a distance of 5–10 centimeters. The totally blind listen to the sound. Where sound alone is not enough to tell the children what is happening on the screen, the teacher explains orally. A video tape recording is taken and shown to the children whenever a repeat is necessary to make the children understand the program.

Television is more frequently used than radio at the schools for the blind because it is important that the children learn to use television to their benefit so that they will be able to obtain the desired information just as the non-handicapped do in the future. There is no reason why the blind should lead a life different from that of the non-handicapped. This is the first reason. The second reason is that in Japan at present television is superior to radio in terms of the contents and number of programs. Most of the superior and enjoyable programs are given on television. The third reason is that blind children should be shown the same television programs watched by non-handicapped children if they are to live and play in the same society.

According to a survey conducted by I. Tamagawa, a teacher at a school for the blind, blind junior high school students prefer television over radio, newspaper and magazine as a means of obtaining information.

Use of Television and Radio at Schools for the Deaf

There are records of radio school programs being used in classes for the hard-of-hearing in Japan before television broadcasting was started in the country in 1953. But it was after the start of television school programs that use of the broadcasting medium became widespread among these schools.

As in the case of the blind, there are relatively few among the pupils at the schools for the deaf who are totally deaf. Most of the children have difficulty of hearing in varying degrees. At virtually all of these schools, individual or group hearing aids are used to listen to the television sound. But these aids alone are not enough for some children. Various other methods have been tried, and some are in use.

The simplest and most widely in use is the video-taping of a television program. Before showing it to the children, the teacher writes some necessary parts of the sound on cards. When the video-tape is played back before the children, the teacher shows each of the cards as the program progresses. The children follow both the screen and the cards, being enabled to understand what is shown on the screen. The number of schools for the deaf using the video-tape recording system is increasing. The most sophisticated method shows the face and mouth of the classroom teacher in a corner of the television screen. The teacher pronounces clearly each word spoken in the program. This is video-taped and shown to the children who understand the program by lip-reading what the teacher is saying. The method enables the children to not only learn what is taught on television but also to acquire lip-reading ability.

The method used at most schools for the deaf at present is the one putting captions on a television program. At 17 schools for the deaf the teachers themselves put captions on the instructional programs for better understanding by the children. Unlike the Western alphabet, the Japanese language has a 46-syllable-letter alphabet as well as thousands of ideographs. For this reason, writing captions on a television program is a difficult and time-consuming task for the teachers. An increasing number of teachers are doing this task today. At the annual summer study meeting of teachers of the schools for the handicapped, the teachers from schools for the deaf bring their captioned television programs and discuss and exchange views on the effective insertion of the letters and characters.

Use of Television and Radio in Schools for Mentally Retarded Children

Two series of the program "Joyful Classroom" are broadcast for the mentally retarded children by NHK throughout the year. In addition, general school television programs are used from time to time.

It is not difficult to convey the television image and sound to the eyes and ears of the children at the schools for the blind and the deaf. But television will not serve its educational role if the contents of the programs do not match the psychological level of these children. "They are constantly moving impulsively and are not for a moment quiet," "They won't watch television even for a minute," "Their attention is drawn to the television screen only when it shows something familiar to them, for example, a dog or a cat". These are the observations mentioned in a report submitted by a teacher using television in classroom instruction for mentally retarded children.

The program "Joyful Classroom" is produced with special consideration given with respect to guidance on everyday life,

numbers and words. There have been many examples of children showing stability as a member of a class group and of being able to show concentration after this program was shown continuously every week.

The mentally retarded children also see a lot of general television school programs, in addition to "Joyful Classroom". The level is lowered, however. Instructional programs for kindergartens are shown to the primary school division children, and the primary school programs to the junior high division students. The kindergarten programs are sometimes shown in the high school division accommodating mentally retarded children aged 15 to 17, depending on their intelligence levels.

Primary and junior high school education was made compulsory for mentally retarded children in 1979. The enrollment of rather serious cases increased at the schools for retarded children. The broadcaster received many reports that even "Joyful Classroom" did not attract the attention of these children and that television did not interest them. Experimental studies are being made for production of television programs that will contribute to education of seriously handicapped children. It is hoped that new television programs that will be truly helpful to these children will appear in the near future.

II. Survey

Survey on the Use of Radio and Television Educational Programs for Handicapped Children

Takashirō Akiyama

Japan Broadcasting Corporation (NHK) offers two series of "Joyful Classroom" which are specially produced for the mentally retarded children of the primary grades. One of the series is for the lower grades and the other is for the upper ones. Children in the schools of handicapped children and in special classes of the junior high and the primary schools often make use not only of "Joyful Classroom" but also of other general instructional programs of radio and television. NHK Radio and Television Culture Research Institute surveyed all schools engaged in special education for handicapped children throughout the country about the penetration rate of radio and television sets, the use of educational programs and problems regarding use of audio-visual aids.

The penetration rate of audio-visual aids such as radio and television sets at schools for the handicapped

According to the survey in 1975, nearly 100% of all schools made use of audio-visual aids such as radio sets, television sets, video tape recorders and audio tape recorders. The situation has been almost the same since then. However, the number of installed units per school continued to increase over the last 4 years from

1975 to 1979. For example, the schools for the blind had 9.6 television sets on the average in 1975, but the figure soared to 13.4 in 1979.

Table 1. The penetration rate of audio-visual aids

(100% = All schools under respective category)

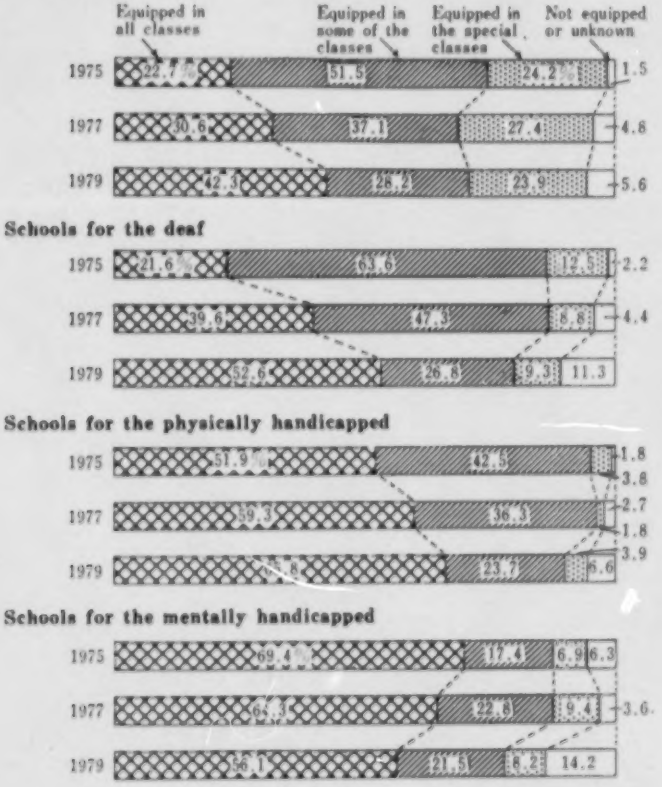
Kinds of Aids \ Category of Schools		Schools for the blind	Schools for the deaf	Schools for the handicapped		
				Physically handicapped	Mentally handicapped	The invalid
TV set	B/W+Color	97.2% (13.4)	99.0% (17.8)	98.7% (15.1)	95.6% (11.4)	100.0% (12.6)
	Color	91.5 (11.0)	97.9 (14.6)	96.1 (12.2)	94.3 (10.0)	96.6 (10.1)
VTR	B/W+Color	74.6 (2.6)	90.7 (3.3)	75.0 (2.2)	54.5 (2.1)	75.0 (2.5)
	Color	69.0 (2.4)	80.4 (2.9)	66.4 (1.9)	49.3 (1.3)	65.9 (2.3)
Radio		100.0	94.8	99.3	94.8	98.9
Audio Tape Recorder		100.0	100.0	98.7	97.0	100.0
Film Projector		87.3	96.9	82.9	72.8	85.2
Overhead Projector		85.9	100.0	90.8	79.8	93.2
Slide Projector		93.0	100.0	92.1	80.1	95.5

Note: The average number of sets held by one school is shown in parentheses (1979)

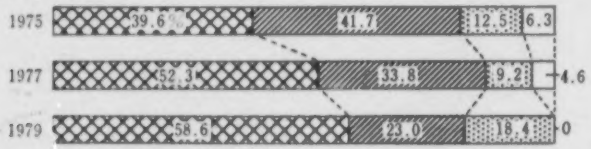
Figure 1 indicates the changes in the number of installed television sets over the 4-year period. 22.7% of the primary classes of schools for the blind throughout the country had television sets in all classes in 1975 and the rate nearly doubled to 42.3% in 1979. The number of primary schools for the deaf, the physically handicapped and the invalid which have television sets in all classes is also increasing. The comparative rate decreased from 69.4% (1975) to 56.1% (1979) at the schools for the mentally handicapped,

because the number of schools for the mentally handicapped almost doubled during the 4 years, and newly established schools are not fully equipped. So the real number of schools which have television sets in all classes has been increasing.

Fig. 1. Comparison of the installation rates of television sets at the primary classes



Schools for the invalid

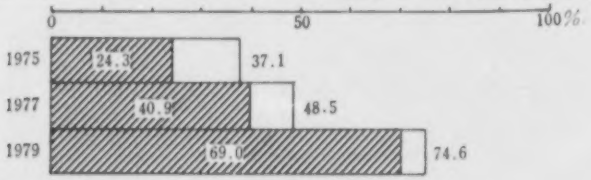


Installation of the video tape recorder is also increasing as in the case of television sets. One-third of the schools for the blind had video tape recorders in 1975, but the rate rose to 74.6%, or three out of every four schools had VTRs in 1979. Other schools except the schools for the mentally handicapped have more and more VTRs every year. 90% of the schools for the deaf have VTRs. The penetration rate of VTRs in the schools for the mentally handicapped has decreased, because the number of newly established schools has increased. The number of schools which have VTRs is increasing.

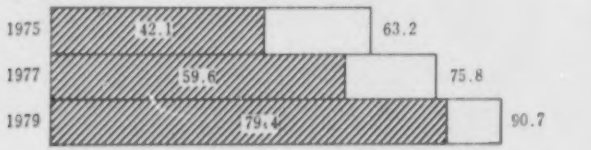
Japanese manufacturers started to offer more sophisticated VTRs at relatively low prices, under $600 during 1981-1982. We can assume schools for the handicapped came to have even more VTRs after the survey in 1979.

Fig. 2. The penetration rate of VTRs by year

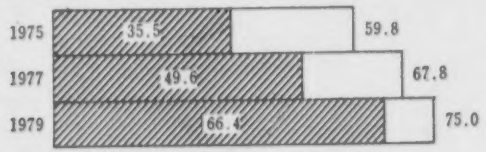
Schools for the blind (100% = All schools under respective category)



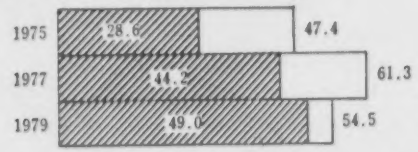
Schools for the deaf



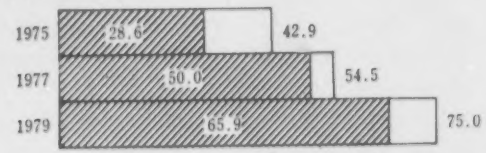
Schools for the physically handicapped



Schools for the mentally handicapped



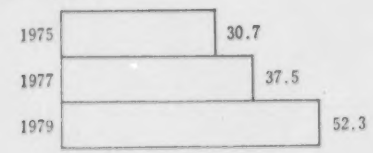
Schools for the invalid



Note : ▨ indicates color VTRs.

(reference)

Primary Schools



The use of radio and television instructional programs

The penetration rate of audio-visual aids equipped at schools is very high as shown in Figs. 1 and 2 and the number of aids has been rapidly increasing. Fig. 3 indicates the use of radio and television educational programs during 1975-1979.

The use of NHK television instructional programs

More use of TV programs was made by the high school level class in all kinds of schools for the handicapped as shown in Fig. 3. As the number of high school level classes increased, more use of NHK TV instructional programs was made too. Fiftyfour high school level classes for the handicapped made use of NHK TV programs in 1975, and 111 classes, more than twice as many as before, made use of them in 1979.

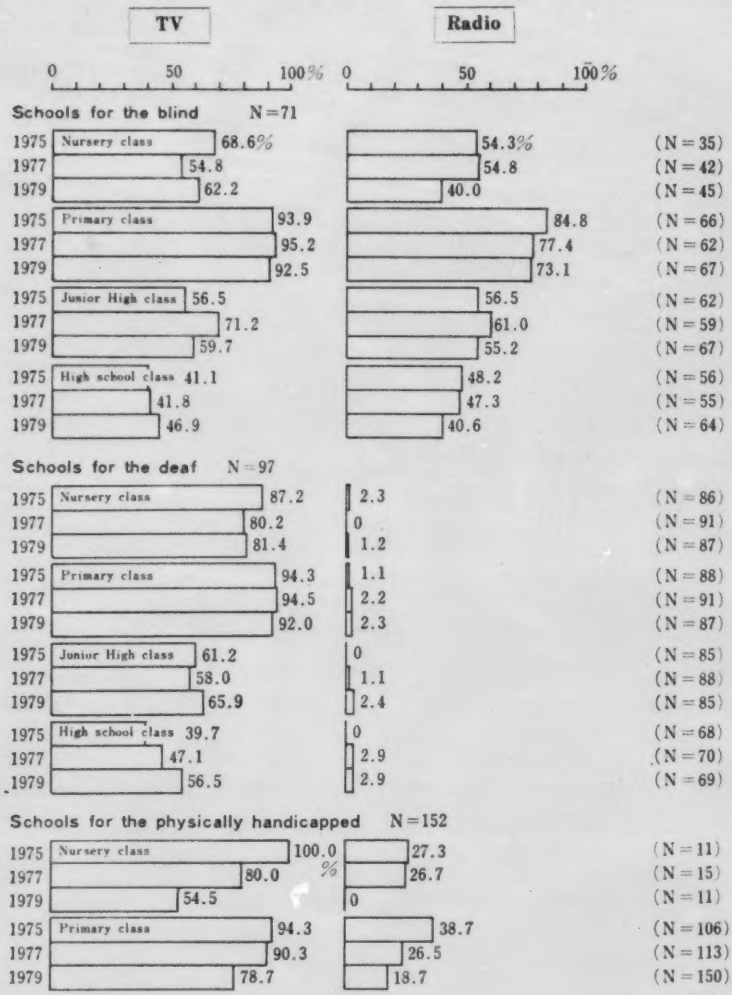
As for the primary classes and the nursery classes in the schools for the handicapped, the number of classes which made use of the programs was decreasing considerably because of the rapid increase of new schools for the mentally and physically handicapped. However, the number of primary classes for the mentally handicapped which made use of NHK TV programs increased from 125 classes to 224 classes for 4 years from 1975 to 1979. We can assume that with more activities at the newly established schools, the more easily they make use of TV programs.

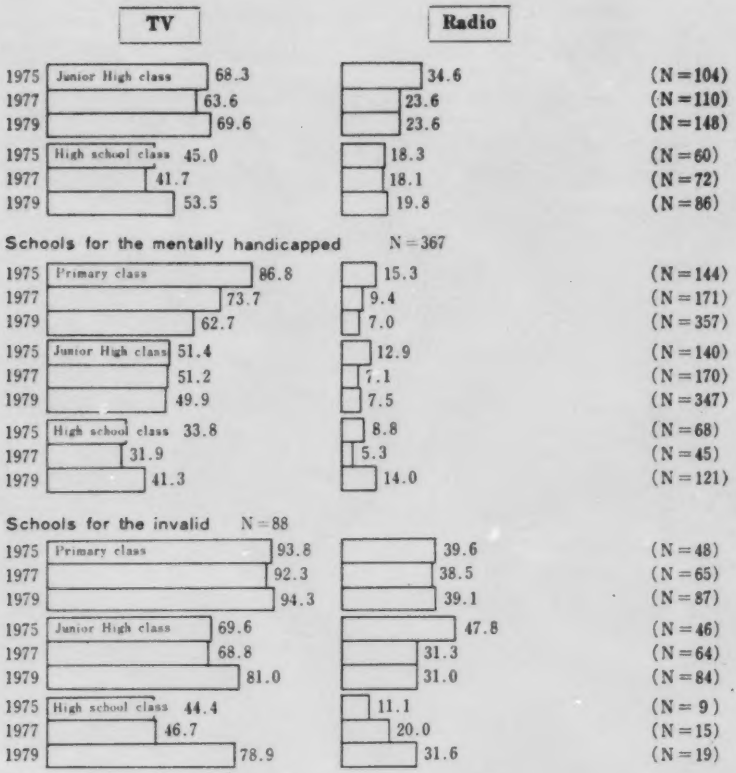
The use of NHK radio instructional programs

The schools for the blind make the most use of NHK radio instructional programs of all the schools engaged in special education. In 1979, 73.1% of the primary classes in the schools for the blind, 55.2% of the junior high classes and 40.6% of the senior high classes made use of the radio instructional programs.

Education by audio-visual aids at the schools for the blind was made mainly over the radio ten years ago, but television has been replacing the radio recently. The ever decreasing use of radio instructional programs for the 4-year period at the schools for the blind seems to be one example of this phenomenon. At the primary schools for the blind, a decline of about 12% is shown in 1979, compared with 1975.

Fig. 3. The use of NHK TV and Radio instructional programs





The problems on the use of TV instructional programs at the schools for the handicapped

The biggest problem on the use of radio and TV instructional programs at schools for the handicapped seems that the degree of mental and physical handicaps of children has worsened. The number of schools which make use of the programs is increasing, but the use at kindergartens and primary schools for the mentally

and physically handicapped is obviously decreasing. This perhaps has something to do with the changes of children resulting from the system to allow them to attend school regardless of the degree of handicap.

Figs. 4 and 5 show the problems on the use of radio and TV instructional programs at schools for the handicapped. Respondent schools were requested to state in either one of the three on each of 14 questions, "Yes, we think so.", "We can't say yes or no." and "No, we don't think so.". The percentage of schools which answered "Yes" is shown on the graph.

First of all, let's compare the schools for the blind with the schools for the deaf. Both schools have three big problems, 1. The class hour does not correspond with the hour of broadcasting. 2. There are not enough VTRs at school. 3. It is difficult to make a syllabus according to the schedule of broadcasting. The ordinary primary schools also have similar problems. However, there are big differences between the schools for the blind and the deaf about the 4th and 5th problems; 4. It is hard to make use of TV programs because the degree of handicap worsens every year. 5. It is hard to make use of TV programs because the degree of handicap differs from each other. Well over 30% of the schools for the blind answered in the affirmative but only 10 to 16% of the schools for the deaf did so. This means that schools for the blind have the big problem of the degree of handicap.

As for three schools, for the mentally handicapped, the physically handicapped and the invalid, they have the three biggest problems as well, and the rate is 10% higher than the schools for the blind and for the deaf. However, we can see that the schools for the physically and the mentally handicapped have more problems when we examine the answers for the next four problems, the 4th, 5th, 6th and 7th. For example, the schools for the mentally handicapped regard the 4th and the 6th problems as the major ones, so that 50.7% of the schools find it difficult to use the programs made for children at ordinary schools and that 33.2% of the

Fig. 4. The problems on the use of radio and TV instructional programs at schools for the handicapped
(Classes for the primary level) (1979)

1. The class hour does not correspond with the hour of broadcasting.
2. There are not enough VTRs.
3. It is difficult to make syllabus according to the schedule of broadcasting.
4. It is hard to make use of TV programs because the degree of handicap worsens every year.
5. It is hard to make use of TV programs because the degree of handicap differs from each other.
6. It is hard to make use of TV programs aimed for the children at ordinary schools.
7. It is hard for the handicapped children to make use of the program "Joyful Classroom."
8. There are not enough television sets which can be used freely.
9. There is no program which conforms to the real state of the handicapped children.
10. We do not know the contents of the programs before watching TV.
11. The handicapped children would not watch TV.
12. We are not interested in making use of TV programs.
13. It is not necessary to make use of TV programs for educating the handicapped children.
14. The educational effects cannot be achieved though we make use of TV programs.

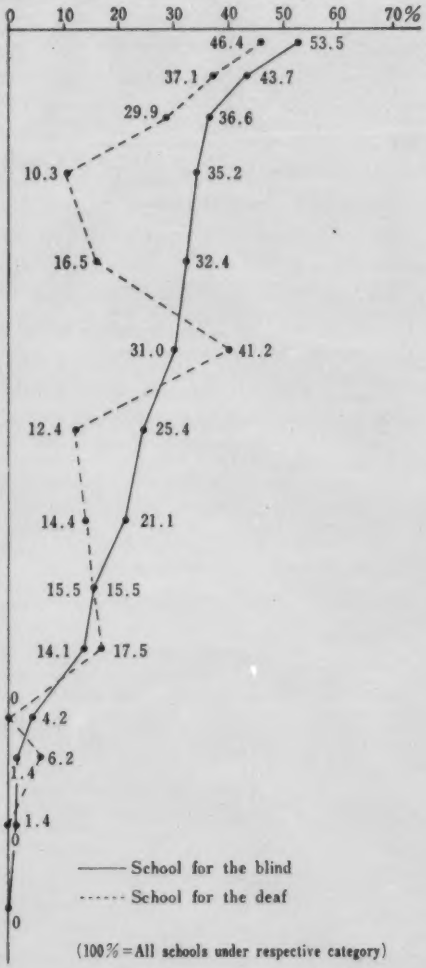
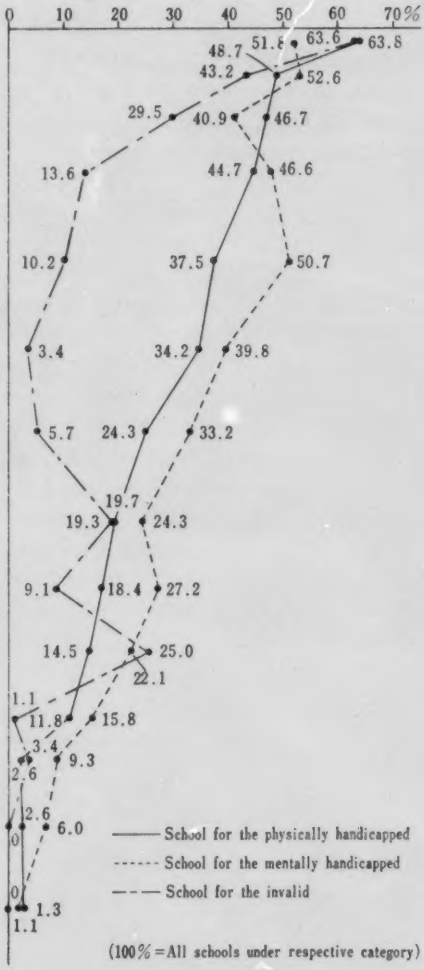


Fig. 5. The problems on the use of radio and TV instructional programs at schools for the handicapped
(Classes for the primary level) (1979)

1. The class hour does not correspond with the hour of broadcasting.
2. There are not enough VTRs.
3. It is difficult to make syllabus according to the schedule of broadcasting.
4. It is hard to make use of TV programs because the degree of handicap worsens every year.
5. It is hard to make use of TV programs because the degree of handicap differs from each other.
6. It is hard to make use of TV programs aimed for the children at ordinary schools.
7. It is hard for the handicapped children to make use of the program "Joyful Classroom."
8. There are not enough television sets which can be used freely.
9. There is no program which conforms to the real state of the handicapped children.
10. We do not know the contents of the programs before watching TV.
11. The handicapped children would not watch TV.
12. We are not interested in making use of TV programs.
13. It is not necessary to make use of the TV programs for educating the handicapped children.
14. The educational effects cannot be achieved though we make use of TV programs.



schools think there is no program which conforms to the real state of handicapped children.

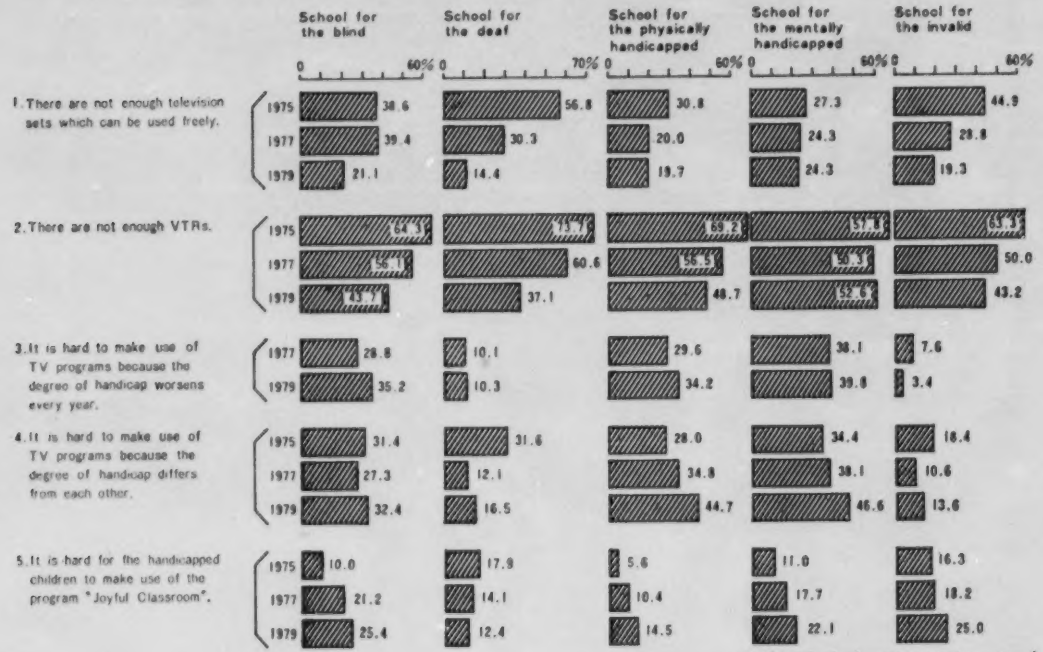
How did the said problems on the use of programs change for 4 years from 1975 to 1979? Fig. 6 shows such changes. As it was mentioned before, VTRs and TV sets became rapidly widespread at the schools for the handicapped and the number of the installed units per school increased. Thus dissatisfaction about shortages lessened. As high as 60 to 70% of the schools had the problem of shortage of VTRs in 1975. The comparable rate has now declined to around 40%. Also the problem of shortage of TV sets has been almost solved.

During the 4 years since 1975, the big problem of difficulty of using the programs because of the differences in degree of children's handicap emerged as we thought, especially at the schools for the mentally and physically handicapped.

Perhaps as a result of such diversification of handicaps, the number of schools which feel it difficult to use the program "Joyful Classroom" for handicapped children is increasing every year. Considering that the above program is specially made for the mentally handicapped children, we must pay special attention to the answers from the schools for the mentally and physically(※) handicapped. During the 4 years there was an upward trend (about 22.1%) in which the schools for the mentally handicapped admitted difficulty of using the above program. Further examination about this data is required.

Note (※): Many children who are mentally handicapped also enter the schools for the physically handicapped recently.

Fig. 6. The changes in the problems on the use of TV educational programs during the 4 years


School for the blind
School for the deaf
School for the physically handicapped
School for the mentally handicapped
School for the invalid
0 60%
0 70%
0 60%
0 60%
0 60%
1. There are not enough television sets which can be used freely.
1975 38.6 56.8 30.8 27.3 44.9
1977 39.4 30.3 20.0 24.3 28.8
1979 21.1 14.4 19.7 24.3 19.3
2. There are not enough VTRs.
1975 65.3 63.4 59.2 57.1 63.3
1977 56.1 60.6 56.5 50.3 50.0
1979 43.2 37.1 48.7 52.6 43.2
3. It is hard to make use of TV programs because the degree of handicap worsens every year.
1977 28.8 10.1 29.6 38.1 7.6
1979 35.2 10.3 34.2 39.8 3.4
4. It is hard to make use of TV programs because the degree of handicap differs from each other.
1975 31.4 31.6 28.0 34.4 18.4
1977 27.3 12.1 34.8 38.1 10.6
1979 32.4 16.5 44.7 46.6 13.6
5. It is hard for the handicapped children to make use of the program "Joyful Classroom".
1975 10.0 17.9 5.6 11.0 16.3
1977 21.2 14.1 10.4 17.7 18.2
1979 25.4 12.4 14.5 22.1 25.0

(100%=All schools under respective category)

Survey

Table 2. The programs often used by the schools for the handicapped

	Rank	Schools for the blind		Schools for the deaf	
Kindergarten	1	Pepe and Mimi (Moral)	37.8%	Creative activities	51.2%
	2	Puppet Play	31.1	Observation of Nature	44.2
	3	Music	31.1	Music	38.4
	4	Storytelling (Radio)	31.7	Puppet Play	34.9
	5	Creative activities	28.9	Playing with Mother	32.6
Primary Class	1	Science Grade 2	64.2	Science Grade 1	78.2
	2	do. 5	61.2	do. 3	69.0
	3	do. 3	59.7	do. 2	66.7
	4	do. 4	59.7	Working People	63.2
	5	do. 1	58.2	Science Grade 4	62.1
Junior High Class	1	Guidance (Radio) Grade 2	41.8	Science Grade 6	36.5
	2	Guidance (Radio) Grade 1	35.8	do. 5	31.8
	3	Science Grade 7	34.3	do. 7	30.6
	4	do. 8	34.3	Travel by film	17.6
	5	do. 9	34.3	Science Grade 8	16.5
High School Class	1	Biology	18.8	Science Grade 8	24.6
	2	For the Youth (Radio)	18.8	do. 9	23.2
	3	Physics	17.2	do. 7	21.7
	4	English Grade 1	15.6	Biology	18.8
	5	English (Radio)	12.5	Green Earth	13.0

—Best 5 programs of radio and TV— 1979

(100%=All schools under respective category)

School for the handicapped					
Schools for the physically handicapped		Schools for the mentally handicapped		Schools for the invalid	
Puppet Play	36.3%	Playing with Mothers	40.0%	——	
Creative activities	27.2	Music	20.0	——	
Music	27.2	Pepe and Mimi	10.0	——	
Pepe and Mimi (Moral)	18.1	Creative activities	10.0	——	
Observation of Nature	18.1	Words and Numbers	10.0	——	
Joyful Classroom (lower grades)	49.3	Playing with mothers	40.9	Science Grade 1	70.1%
Working People	48.0	Joyful Classroom	37.1	do. 2	70.1
Wonderland	43.3	Music	31.4	do. 3	70.1
Science Grade 2	42.7	One, two, Dong	30.2	do. 4	69.0
do. 1	42.0	Creative activities	23.7	Working People	66.7
Science Grade 7	30.4	Words and Numbers	38.6	Science Grade 7	45.2
do. 8	25.7	Safety Class	23.6	do. 8	42.9
do. 9	21.6	Puppet Play	18.4	do. 9	42.9
Working people	14.9	Working People	18.2	History Grade 7	31.0
Puppet Play	13.5	Playing with Mother	17.9	do. 8	28.6
Plaza for the Youth	12.8	Working People	9.1	Geology	36.8
Geology	11.6	Safety Class	7.4	Plaza for the Youth	36 8
Biology	11.6	Music	7.4	English Grade 3	31.6
Physics	11.6	Science Grade 3	6.6	Biology	26.3
Chemistry	10.5	Safety Class	6.6	Physics	26.3

III. Experimental Study

VTR Teaching Material "Grouping Fellows Together"

—Its Trial Production and Measurement of Viewing Effect—

Noboru Ōtomo, Chief Researcher, National Institute of Special Education

1. Progress of Research Work

We have produced a number of video tape recordings on an experimental basis since we produced a VTR teaching material on a trial basis in 1967. We then had handicapped children view those tapes to see how such children reacted to them.

That handicapped children are inferior to normal children in the understanding of images is known, and the following have been pointed out especially as distinctive characteristics of mentally retarded children.

(1) Mentally retarded children have difficulty in understanding the story even when it is simple.

(2) Mentally retarded children have difficulty in understanding parts in relation to the whole. Their answers to the questions asked after viewing are incoherent and fragmentary.

(3) Mentally retarded children fail to ask "why?" on viewing TV; they have difficulty in understanding the cause-and-effect relationship.

(4) Mentally retarded children have difficulty in comprehending the size of objects shown on TV.

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(5) Mentally retarded children are extremely low in their ability to analyze or synthesize what they see on the TV screen.

On the basis of such findings, we have made further studies as to what kinds of VTR teaching materials will be useful to the learning efforts of handicapped children. We have thus been challenging the task of developing VTR teaching materials that will enhance learning effects for handicapped children. And the following points may be cited as requiring careful attention in the production of VTR teaching materials.

(1) Switching of scenes on the TV screen should be slowed down.

(2) Based on the experience of handicapped children, program contents should be concrete and easy to comprehend.

(3) The plot of the story should be made simple.

(4) Use of still pictures should be made.

(5) Drawings and pictures should be included.

(6) In visual discrimination, colors and forms should be presented in the order conducive to easy comprehension.

(7) Ideas should be applied to music effect.

Recently, we have produced a VTR program titled "Grouping Fellows Together (*Nakama Atsume*)" which is based on the theme of classificatory learning. The program was presented before higher graders at a school for mentally retarded children.

2. Composition of Video-tape Program "Grouping Fellows Together"

Time	Screen	Composition and sound
0:00		A boy and a girl are playing with building blocks (square, triangular, rectangular) spread all over the room. The title "Grouping Fellows Together" inserted. Narrator: "Grouping Fellows Together."

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0:10		The two children are piling up the building blocks. Nar: "I wonder what they are playing?" Nar: "Oh, you've piled them up high." The girl's pile that has risen high falls down. The boy piles the blocks high. Nar: "Yo-ho!"
0:46		They pile the blocks anew to form a tunnel. Nar: "Ah, you have a tunnel this time." Nar: "Shall we pass through the tunnel?" The tunnel breaks up by their trying to pass through it.
1:12		Two children are facing each other and talking. Nar: "Shall we play with an electric train this time?" Nar: "Uh-huh. Let's group the same kinds together and put them away." They begin putting them away.
1:22		The two children begin tidying up using three baskets intended for that purpose. They try to put triangular building blocks into the basket. Nar: "Where do these go? Here?" Tidying up goes on in the order of triangular, square and rectangular blocks.
2:15		After finishing tidying up, the baskets —UP (shot in close-up). Nar: "That was a good job of tidying up."

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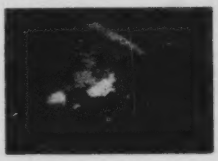
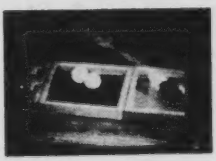
2:22		Rectangular building blocks—UP. Nar: "These are rectangular building blocks."
2:29		Triangular building blocks—UP. Nar: "These are triangular building blocks."
2:35		Square building blocks—UP. Nar: "These are square building blocks."
2:42		A scene showing two children playing with an electric train.
3:00		The girl is receiving what are carried on the electric train from the boy and is putting them into a box. Nar: "You're playing with an electric train, aren't you?" Nar: "Oh, look! The train is carrying something. I wonder what it is!"

3 : 34		Tunnel—UP. Nar : " What will be coming out? " The electric train comes out of the tunnel. A doll is on the train. Nar : " Well, this is a doll ! "
3 : 49		Scene taking the doll from the train and putting it into the box—UP. Nar : " Let's put the doll into the doll box."
4 : 01		Tunnel—UP. Nar : " What will be next? " The electric train comes out of the tunnel. A ball is on it. Nar : " Well, a ball ! "
4 : 22		Scene taking the ball from the train and putting it into the ball box—UP. Nar : " Let's put the ball into the ball box."
4 : 36		Tunnel—UP. Nar : " What will be next? " The electric train with a car appears. Nar : " Well, it's a car ! "

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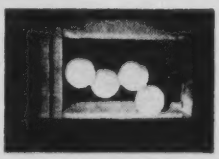
4 : 54		Scene taking the car from the electric train and putting it into the car box —UP. Nar : "Let's put the car into the car box."
5 : 10		Tunnel—UP. Nar : "What will be next?" The electric train loaded with a doll comes out. Nar : "Well, it's a doll. Let's put the doll into the doll box."
5 : 25		Three boxes respectively containing dolls, balls and cars and the girl. Nar : "How neatly they are arranged!"
5 : 46		Doll box—UP. Nar : "These are the fellows of dolls."
5 : 53		Ball box—UP. Nar : "These are the fellows of balls."

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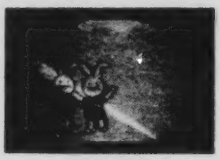
6:00		Car box—UP. Nar: "These are the fellows of cars." PAN (panning camera) to show all three boxes. Scene of the two children playing with the electric train again.
6:23		A rabbit makes appearance by means of animation. Nar: "Come together here, you rabbits!"
6:34		Two more rabbits. Nar: "Ahoy!"
6:40		Three more rabbits. Nar: "Ahoy!"
6:45		A bear comes out. Nar: "Well, the bear, go away!" A star twinkles on the bear's head. The bear disappears.

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6:53		Three rabbits remain. Nar: "These are the fellows of rabbits."
7:10		The title "The End"

3. Details of Tests and Viewing Record for Viewing Effect Rating

(1) Pre-viewing Test

a. Classification of Building Blocks

Blocks of the same shape are grouped together from the square, rectangular and triangular blocks.

Problem: (Setting is made as in the photograph) The subject is told, "Here we have a lot of building blocks. Put the blocks of the same shape together in the box." The blocks are to be put into three boxes (time limit: 1 minute).

b. Classification of Toys

Dolls, balls and toy autos are to be classified.

Problem: (Setting is made as in the photograph) "We have a lot of toys this time, haven't we? Collect the same toys together and form groups with them."

Photo 1. Classification of building blocks

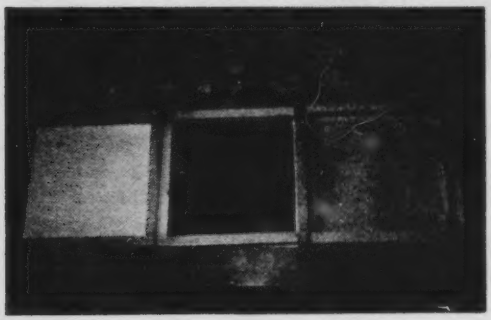

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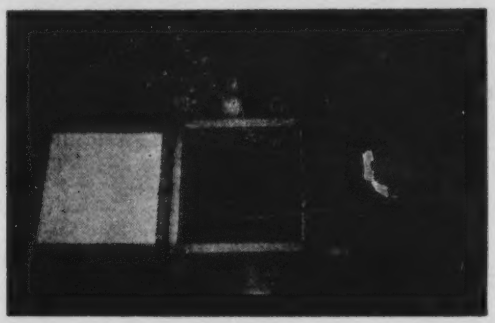
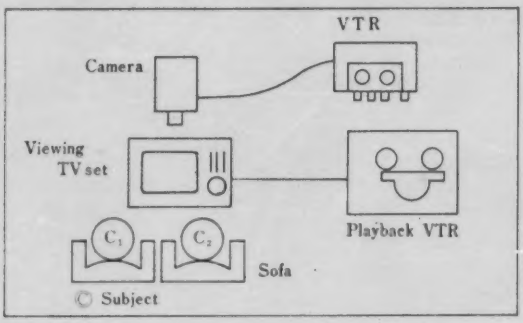
Photo 2. Classification of toys



(2) Viewing Record

After the foregoing tests, the video tape recording is shown to two subjects at a time. The program contents are made up of building blocks, toys and the animation portion. The manner of viewing is recorded on the recording paper. Also, as shown in the diagram, a camera for recording is set up on the television set to measure the degree of attention paid during viewing.

Fig. 1. Arrangement in the test room



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(3) Post-viewing Test

The same test given before viewing is given and the viewing effect is examined.

(4) Recording Paper

The recording paper is as shown in Fig. 2.

Fig. 2. Test recording form

[Test Recording Paper]

Form to Record Effects of Video Teaching Material

Date:

(Name) (Male) (Female)

(Date of birth) (Examiner)

(CA) yrs. mon. (School grade) grade, primary

(IQ) (MA) yrs. mon.

No.	Problem	Manner of solving the problem is recorded
① Pre-test	Building blocks	
	Toys	
② TV viewing	TV viewing	Distinctive features noted during viewing are recorded
	Ⓐ Tape showing building blocks	
	Ⓑ Tape showing electric train and toys	
	Ⓒ Animation tape	
		As to which of Ⓐ, Ⓑ and Ⓒ the subjects watched with closer attention is recorded together with the manner of viewing
③ Post-test	Building blocks	
	Toys	
Points noted through the test are stated		

4. Subjects

The children given the test consisted of 25 primary grade (4th

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Table 1. Catalogued characteristics of subjects

(M : age of motor development, S : age of social activities development, L : age of lauguage development)

No.	Grade, Sex	CA	MA	IQ	Medical diagnosis
①	6 M	12:10	4:11	39	Down's syndrome
②	5 F	12: 5	4:11	38	Down's syndrome
③	5 F	11:10	4: 7	39	
④	4 F	11: 3	4: 1	36	Down's syndrome
⑤	5 M	11: 6	4: 0	35	Down's syndrome
⑥	5 M	11: 0	3:11	36	Autistic tendency
⑦	6 F	13: 0	3: 9	29	Epileptic
⑧	4 M	10: 3	3: 9	37	Down's syndrome
⑨	6 F	12: 8	2: 4	18	Cerebral ventricle expanded
⑩	6 M	11:11	1: 3	10	
⑪	5 M	11: 1	M 2:0 S 2:6 L 1:2		Down's syndrome
⑫	5 M	11: 9	M 2:9 S 2:6 L 1:0		Hydrocephalus
⑬	5 M	11: 2	M 3:8 S 3:0 L 2:6		Down's syndrome
⑭	5 M	11: 5	M 3:0 S 3:4 L 2:6		
⑮	5 M	11: 7	M 4:8 S 4:8 L 3:6		Down's syndrome
⑯	5 M	11: 7	M 2:4 S 2:4 L 1:4		Epileptic
⑰	5 M	11: 5	M 4:0 S 2:6 L 2:6		Autistic tendency
⑱	5 M	11:11	M 2:9 S 2:9 L 1:4		Epileptic
⑲	5 F	11: 2	M 2:3 S 2:3 L 1:9		Autistic tendency
⑳	5 F	11: 0	M 3:4 S 3:0 L 2:0		Down's syndrome
㉑	5 F	11: 3	M 3:0 S 2:6 L 3:0		Down's syndrome, heart trouble
㉒	5 F	11: 5	Not examined		Epileptic
㉓	6 F	12: 3	Not examined		Epileptic
㉔	4 F	10: 2	Not examined		Autistic tendency
㉕	5 F	11: 9	Not examined		Epileptic

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to 6th) children selected from three schools for mentally retarded children. Details of the subjects were as given in Table 1.

5. Results of Pre-viewing Test and Post-viewing Test

The results of the two tests graded individualy were as given below.

(1) Those who made perfect scores both in the previewing and post-viewing tests were Nos. 2, 4, 7, 16 and 20.

(2) Those who gave wrong answers in the pre-viewing test but right answers in the post-viewing test were as follows:

a. Those who gave the correct answer to one question and wrong answer to the other question in the pre-viewing test but gave correct answers to both in the post-viewing test: 2 children. (No. 3, in the building blocks classifying test, classified five blocks out of nine correctly but failed to classify the remaining four, but after viewing she correctly classified them all) (No. 12, in the toy classifying test, confused dolls and autos, but corrected himself after viewing)

b. Those who were wrong in both in the pre-viewing test but corrected themselves after viewing were Nos. 1, 5, 6 and 8 (all four children's classification was haphazard before viewing but all corrected themselves after viewing).

c. Those who were wrong in both in the pre-viewing test but got one right after viewing were Nos. 9, 17 and 19.

(3) Those who were wrong both in the pre-viewing and post-viewing tests were Nos. 10, 11, 13, 14, 15, 18, 21, 22, 23, 24, 25, totalling 11 in all.

The results tabulated give the following Table 2.:

6. Result of Close Attention-Paying Time

The duration of paying close attention to TV was analyzed as

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Table 2. Showing individual results of pre-viewing and post-viewing tests

a : square, b : triangular, c : rectangular,
B : ball, C : car D : doll
○ : perfection

Subjects		2	4	7	16	20	3	12	6	1
Building block	Pre-viewing test	○	○	○	○	○	a a / b b / c	○	a b c / a b c / a b c	a a b b c / a b c / c
	Post-viewing test	○	○	○	○	○	○	○	○	○
Toys	Pre-viewing test	○	○	○	○	○	○	B B B / D D D C C / C	B C / B B D D / C C D	B B B C D / C D / C D
	Post-viewing test	○	○	○	○	○	○	○	○	○

Subjects		5	8	19	17	9	13	14	25
Building block	Pre-viewing test	a b c / a b c / a b c	a / b b b a / a c c	a b c / a b c / a b c	b b b / a a c c / a c	b / a a b c c	a b c / a b c / a b c	a c / a c / a b b b c	
	Post-viewing test	○	○	a b c / a b c / a b c	○	c / b b / a a a b c c	a b c / a b c / a b c	a b c / a b c / a b c	a b c / a b c / a b c
Toys	Pre-viewing test	B C D / B C D / B C D	B C D / B D / B	B C D / B C D / B C D	B C D / B C D / B C D	B C D / B D / B	B C D D / B C D / B C	D D / B C C C / B B D	B C D / B C D / B C D
	Post-viewing test	○	○	○	B C D / B C D / B C D	○	B C D / B C D / B C	B C D / B C D / B C D	B C D / B C D / B C D

Subjects		22	15	21	10	18	23	24	11
Building block	Pre-viewing test		a b c c / a b c / a b	a a b b c / a c / c c	a a a b b b	a a b c c c / a b c			
	Post-viewing test	a b c / a b c / a b c	a b b b / a c / a c c	a c c / a a b c / b b	a b b / a c c c / a b	b b b / a a a c c	a a a b b b c c	a a a b b c c c	
Toys	Pre-viewing test	B C / B C D D / B C D	B C D / B C D / B C D	B C D / B C D / B C D	B C / B C D / B C D	B B C C C D	B B D D D / B C C C	B B B C C C D D	
	Post-viewing test	B C D / B C D / B C D	B C D / B C D / B C D	B C D / B C D / B C D	B / C C D / B B C D	B B B / C C D / C D D	B B B C C C D		B C C C D D / B B

in Fig. 3 by reproducing the record taken of the manner of viewing by the subject children.

Closely watching time of 10 children, from No. 1 to No. 10 inclusive, were analyzed. Table 3 shows the ratings of close attention for each scene.

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Fig. 3. Analysis of closely watching behavior of Nos. 1 and 10

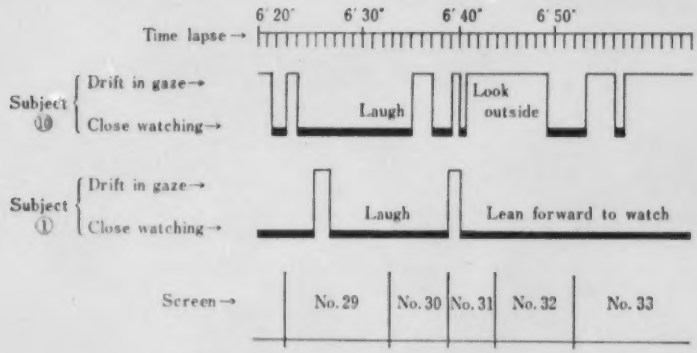

Table 3. Screen Gazing Situation (broadcasting time—7 min. 10 sec.)

Screen No.	Screen Time	Subject ①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	Average
1	Title (9″)	⊙	⊙	⊙	○	⊙	○	◎	◎	⊙	○	92.7
2	Tower building (36″)	⊙	◎	◎	△	◎	▲	○	◎	▲	▲	71.1
3	Tunnel building (17″)	○	○	⊙	○	◎	▲	⊙	△	▲	▲	62.2
4	Passing through tunnel (9″)	△	⊙	▲	⊙	⊙	⊙	⊙	△	▲(0)	△	72.5
5	Consultation (10″)	⊙	⊙	◎	⊙	⊙	◎	⊙	⊙	△	▲(0)	82.5
6	Tidying up (53″)	◎	◎	◎	◎	◎	△	◎	△	▲	▲	71.1
7	Full view of three boxes (7″)	⊙	⊙	⊙	⊙	⊙	△	⊙	⊙	▲(0)	▲(0)	75.7
8	Group of rectangular blocks (7″)	⊙	◎	◎	⊙	⊙	▲	⊙	⊙	▲(0)	▲(0)	70.8
9	Group of triangular blocks (6″)	⊙	○	△	◎	⊙	○	⊙	⊙	▲(0)	▲(0)	71.4
10	Group of square blocks (7″)	⊙	○	⊙	⊙	◎	◎	⊙	⊙	▲(0)	▲(0)	75.7
11	Full view of electric train game (18″)	⊙	⊙	⊙	⊙	⊙	△	⊙	△	◎	▲	82.3
12	Loading on train (21″)	○	⊙	◎	⊙	⊙	▲	⊙	△	○	▲	75.4
13	Unloading from train (13″)	⊙	⊙	◎	⊙	◎	▲	⊙	▲	△	▲	70.3

14	Coming out of tunnel (doll) (15″)	⊙	⊙	⊙	⊙	⊙	△	⊙	◎	▲	▲	77.1
15	Grouping of fellows (dolls) (12″)	⊙	△	⊙	◎	⊙	○	⊙	▲	○	▲(0)	74.2
16	Coming out of tunnel (ball) (21″)	⊙	◎	⊙	◎	⊙	⊙	⊙	◎	▲	▲	82.4
17	Grouping of fellows (balls) (14″)	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	△	▲	88.2
18	Coming out of tunnel (car) (18″)	◎	⊙	◎	◎	△	△	△	◎	▲	▲(0)	57.7
19	Grouping of fellows (cars) (16″)	○	⊙	⊙	○	◎	◎	⊙	○	▲	▲	74.5
20	Coming out of tunnel (doll) (15″)	◎	◎	△	◎	◎	△	⊙	◎	▲	▲(0)	69.1
21	Grouping of fellows (dolls) (16″)	⊙	○	△	○	⊙	▲	◎	⊙	▲(0)	△	68.8
22	Full view of three boxes (5″)	⊙	▲	○	⊙	⊙	▲(0)	◎	◎	▲(0)	▲	61.0
23	Doll box UP (7″)	◎	○	○	○	◎	△	⊙	⊙	▲(0)	▲(0)	67.9
24	Ball box UP (7″)	⊙	⊙	○	⊙	◎	○	⊙	◎	○	△	85.6
25	Car box UP (9″)	⊙	◎	○	⊙	⊙	○	⊙	◎	▲	▲	82.1
26	Full view of three boxes (3″)	⊙	⊙	△	⊙	⊙	△	⊙	△	▲	▲	75.1
27	Full view of electric train game (11″)	⊙	⊙	⊙	⊙	⊙	△	⊙	▲	▲	▲	74.5
28	One animated rabbit (11″)	◎	⊙	⊙	◎	⊙	◎	⊙	◎	◎	◎	93.5
29	Two animated rabbits (6″)	⊙	⊙	⊙	△	⊙	⊙	⊙	△	▲	△	80.8
30	Three animated rabbits (5″)	◎	⊙	⊙	△	⊙	▲	⊙	⊙	◎	▲(0)	75.0
31	Bear joins the group (8″)	⊙	⊙	◎	◎	⊙	▲	◎	⊙	▲	▲	77.2
32	Bear disappears, three rabbits remain (18″)	⊙	⊙	○	○	⊙	▲	○	◎	▲	▲	70.2
Total closely watching time (100% = 430 sec.)		sec. 403.5	404.3	380.5	380.3	391.3	250	409.8	342	172	72.5	320.6
Total closely watching rating (%)		93.8	94.0	88.5	88.4	91.0	58.1	95.3	79.5	40	16.9	74.6

Note: (Rating of close attention paid to screen): duration of paying close attention to screen + broadcasting time

(Signs) ◎ Closely watching rate of 100% ⊙ 99—85%
○ 84—70% △ 69—50% ▲ 49% or below

7. Comments

Comparison of the results of tests before and after viewing brought out six children showing outstanding effects of viewing, three showing some effects of viewing and eleven showing no viewing effects.

No. 6 at first distributed one building block each to the three boxes but achieved correct grouping in the post-viewing test. No. 19 at first distributed one building block and one toy to each box, and in the post-viewing test she solved the toy grouping problem correctly but showed no improvement in the building block problem solving. No. 17 solved the building block problem correctly in the post-viewing test but he continued to be wrong in solving the toy problem as he still distributed one to each box as in the pre-viewing test.

Such distribution of one of each kind to each box was done by Nos. 13, 14, 15, 21 and 25. As to why they did not fully understand the problem in classifying by kind is not clear, but a conspicuous trend was that these subjects distributed one by one into each box after first collecting objects of the same kind near at hand. Whether presentation of the problem was poor or use of three of the same for each kind led to a misunderstanding a problem to look into in the future.

Data on ten subjects only could be obtained with regard to the closely watching time, but the following points may be mentioned on this subject:

(1) The program consists of three parts, namely, the building block game, electric train game (classification of toys) and animation part, and the subjects above 3 in mental age generally marked high close attention rating.

(2) Subjects No. 9 and No. 10, who scored low close attention ratings, seemed to have little interest in the program contents due to low intelligence. These two children are not used to watching television programs even in their everyday life, and

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that seemed to give rise to some questions about their viewing manner. More future guidance on this point is considered necessary.

(3) The close attention rating is higher when the title is shown and where the scene undergoes conspicuous change. When the same scene continues (scenes 3 and 6) or when similar scenes are repeatedly shown (scenes 18, 21, 22, 32), the close attention rating drops.

(4) When the building block tower or tunnel broke down in the electric train game (Nos. 11 and 12) or when the electric train came out of the tunnel (Nos. 14, 16), many of the children were watching with their bodies leaning forward.

(5) The close attention rating of the scene showing the electric train coming out of the tunnel was high, but there were differences according to the objects shown. For instance, 77.1% was registered for the dolls, 82.4% for balls, 57.7% for cars and 69.1% for dolls. These differences in the close attention rating may serve as reference in considering the effect of repetition of a scene.

(6) In the close attention rating related to the three kinds of toys, balls registered somewhat higher rating than others all through the scenes like unloading the toys and collecting the same kinds and presentation of close-up shots.

(7) In the three component parts, including the building block game, electric train game (classification of toys) and animation, the close attention rating was the highest for the animation part. Even Nos. 9 and 10, who showed low general close attention rating, were paying closer attention to this portion.

(8) Some, like Nos. 4, 7 and 8, showed low close attention rating immediately after starting to watch the program, which gives rise to the need for applying more ideas to the introductory phase.

(9) Subject No. 6, who has an autistic tendency, apparently seemed to be paying attention to the screen, but his eyes were frequently turned to directions other than the screen. It may well

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be said that from this fact rating of the degree of close attention using a TV camera, such as was used for this study, would be necessary.

8. Conclusion

The present study was an attempt at working out some programs that will enhance the learning effect for handicapped children by using VTR programs produced with attention paid to the characteristics of handicapped children's process of comprehending TV programs. In particular, a probe into the kinds of programs that will cope with profound and severe mental retardation in schools for the mentally retarded children was desired. While further study would be necessary to determine whether the program prepared at this time was in accord with the above aim or not, some points noted with regard to future production of teaching materials or learning through broadcasting will be cited.

(1) Among the three component parts of the program used at this time, the scenes presented in animation marked the highest close attention rating. As methods of preparing animation scenes are available even for amateurs, such VTR materials are recommended for profoundly and severely retarded children.

(2) Also the high close-attention rating of scenes presenting performers of age groups similar to the viewing children is empirically known through production of VTR programs depicting school functions. It is necessary to provide scenes that will meet the preferences of the viewing children.

(3) The viewing effect seen in the children from the three different schools at this time seems to have differed markedly depending upon whether or not school broadcasting programs are normally viewed at the schools. In other words, experience in learning through broadcasting has been found to affect the viewing effect. For this reason, it is necessary to let the severely retarded children experience learning through broadcasting activity.

This study was made under the cooperation of the following members:
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IV. Studies on Classroom Teaching

1. Using TV at Introductory and Concluding Stages of a Classroom Lesson Given at a School for Mentally Retarded Children

—The Ōtsuka School for the Handicapped,
Attached to The University of Tsukuba—

1. Purpose of using TV in the classroom lesson

(1) The program to be used:

"Joyful Classroom" with a subtitle "Which Is Higher?" broadcast on November 7, 1978 by NHK Educational TV Station aimed at mentally retarded children in lower grades of primary school.

(2) The purpose of using TV at the introductory stage of the lesson:

At the introductory stage of the lesson, we plan to interest the children in "height" and make them experience with their own senses and feelings what it is like to be "high." In order to accomplish this purpose, we will make full use of the merits of TV as follows.

a) The use of music in the program as much as possible, for music helps children a great deal to understand the program and to participate in it smoothly and willingly.

b) The use of simplified materials and objects which are available in the children's daily lives. (painted in eye-catching colors.)

c) Technical devices of TV are utilized to their full extent, which has made the program more entertaining to watch.

d) Pictures of various materials are repetitively shown so that the content has become easier for the children to grasp.

(3) The purpose of using TV at the concluding stage of the lesson

a) To put in order what children have learned so far.

b) Out of the whole series, we will pick up only the parts where "height" is featured and put them together into one separate program so that the children may reconfirm what they have learned so far by watching it.

2. Structure of the lesson

(1) Unit: Math "Which Is Higher?" (6 hours in total)

(2) Purposes

a) To make the children get to know and take interest in "height"

b) To make them understand and familiarize themselves with such terms used concerning height as "high", "low." "X is high (or low)", "to compare", "higher", etc.

c) To enable them to distinguish which is higher when they compare two objects to be found in their daily lives.

d) To enable them to understand that the term "high" is used in a comparative sense.

(3) Lesson Plans

Date	Purposes	Content of the Lesson
① Dec. 8	◦ To interest the children in height by letting them experience with their own senses and feelings what it is to be "high" (or "tall"). ◦ To interest them in comparing things through comparing the heights of two objects.	1) TV viewing 2) Piling up blocks and comparing the heights of the piles after watching the TV program. ◦ Comparing the heights of the children (Stepping onto a high stool, etc.)

② Dec. 11	◦ Through comparing the heights of two objects which are quite familiar in children's daily lives, to make them familiar with such terms as "high (or "tall")", "to compare." (between the two with a large difference in their heights)	◦ Comparing their own heights, chairs, desks, trees, plants and buildings (comparing objects belonging to the same category)
③ Dec. 11	◦ Through comparing the heights of two objects which are available in children's daily lives, to make them learn how to compare things. (between those with a little difference in their heights.)	◦ Comparing their own heights, chairs, desks, plants. (comparing objects of the same category but variant in degree of difference)
④ Dec. 12	◦ Through comparing the heights of two objects which are available in children's daily lives, to make them learn how to compare things. ◦ To make them learn how to use the term "high (or "tall")".	◦ Comparing their own heights, desks, chairs and plants. (Out of three objects A>B>C, comparing A with B, B with C.)
⑤ Dec. 13	◦ By choosing two or three objects familiar to the children out of more varieties, and then comparing their heights, to make them familiar with the terms for comparing heights. (Two objects are placed apart with a considerable distance in between.)	◦ Comparing various objects such as desks, chairs, plants, buildings paired together.
⑥ Dec. 18	◦ Through comparing the heights of two objects familiar in children's daily lives, to enable them to use the terms. ◦ Through watching and listening to TV, to make them confirm how to compare heights and consolidate the terms.	◦ TV viewing ◦ Guidance to be given after watching the program and its evaluation to follow. Comparing the heights of desks, chairs and plants. (Individual answers from the children and evaluation to follow afterwards.)

3. Specific Analyses of the Children

Name grade sex	I.Q. (MA)	a=How they react at the time of TV viewing b=Personal characteristics and traits
H. 2 boy	32 (2:7)	a. Can concentrate himself well on the program. Reactions do not go any further than changes to be observed in facial expressions. b. Used to have an inclination for keeping mute at school, but has almost overcome this disadvantage. Careful, precise, never puts into action unless confident. Tends to be tense when facing new situations
J. 2 boy	63 (4:5)	a. Loves TV and watches it for a long time at home. Moves his body to the rhythm of music and to the movements of performers. b. Active, cheerful, restless. Quick to react. Gentle but can be violent at times.
N. 2 girl	57 (4:5)	a. Concentrates well. Approaches the screen or reacts with the movement of her body at times. b. Active, cheerful, cares much as to which side wins or loses, and feels resentful when loses. Stubborn and behaviors of dependency on teachers are frequently observed.
K. 2 girl	immeasurable	a. At the time of watching the program, keeps seated but scarcely watches it with interest—just glancing at it a few times in 20 minutes of the program. However, in case of the VTR of the musical play in which she herself participated, watches it for more than three minutes with concentration. b. Cheerful, has good sense of rhythm, interested in music, stamps her feet and claps her hands responding to music. Has a habitual inclination for waving her handkerchief. Still needs some help in looking after herself. The words she can comprehend and manage to use are 40~50 nouns. Can follow directions but not perfectly.

Note: All Down's Syndrome children
I.Q. measured by Suzuki-Binet Method

Preparatory Survey on their Aptitude concerning "Comparison of Heights" (carried out on Oct. 25)

Content	A teacher and a student stand side by side and ask them which is taller. The same question asked twice.
Names of children	J. Both correct. Answers "The teacher." H. Both correct. Points to the teacher. N. Both correct. Answers "The teacher." K. ——
Content	Two children stand side by side and ask them which is taller. The same question asked twice.
Names of children	J. Both correct. Answers "A." H. First wrong. Second correct. Points to the taller one. N. Both correct. Answers "A." K. ——
Content	The heights of two objects placed vertically with some space in between. A wall clock and a toy clock hung on the wall one meter apart from each other. The teacher asks which is higher.
Names of children	J. First correct. Second, points to the higher one. H. First, no answer. Second, correct and points to the higher one. N. First correct. Second, points to the higher one. K. ——
Content	The heights of two things vertically placed with some space in between. Referring to the two magnetic picture cards with a butterfly pattern placed 25 cm apart from each other, the teacher asks them which is higher.
Names of children	J. First, wrong. Second, correct. Points to the higher one. H. Both wrong. After letting two children stand corresponding to each magnetic card, at the third time, correct. Points to the higher one. N. First, wrong. Second, correct. Points to the higher one. K. ——

Judging from the result of this preparatory survey of their aptitude, we have set separate goals of the lesson for each child as below:

J. and N.....To be familiar with the terms of comparing heights and to be able to use them. Not only "high" but also "low" and "same."

H.....To comprehend comparison of heights and to be able to use the terms to a certain extent.

K.....To reach the level of trying to react to the command "Compare the two." To realize what is "height."

4. Process of Guidance

Time, Date	Process of Guidance
(1) Dec. 8	◦ To make them become conscious of height through their own senses and feelings and also be interested in it. At the same time, to familiarize them with the terms and activities concerning comparison of heights and eventually be interested in comparing things by themselves. 1. They all concentrate well on TV except K. 2. During the lesson after the TV program, K doesn't participate in the former half. (cf. 5. Development of the Lesson with the Use of TV)
(2) Dec. 11	◦ Through comparing the heights of two things which are familiar to the children in everyday life, our purpose is to make them familiar with such terms as "high," "to compare," and "which." We also intend to enable them to distinguish the higher one of the two. (Objects are limited to those selected from the same category and difference in height is made large.) 1. Heights of the children themselves, chairs, desks, trees, plants, buildings are compared. ◦ J. and N. can distinguish the higher ones, but their answers are no more than "This one," or "High," pointing to the higher object.

	◦ H. either errs in comparison of the buildings or can't give correct answers. The reason for this could be explained as follows: the actual difference between the heights of the buildings is large enough, however, because of the distance between the objects and H. himself, it is difficult for him to distinguish them due to the small angle in eyesight.
(3) Dec. 11	◦ Through comparing the heights of two objects which are familiar in the children's daily lives, our aim is to enable them to understand what it is like to be "high," "low," or "same." At the same time we urge them to become familiar with such terms as "high," "low," "same," "to compare," and "which"; and to be able to use these terms to a certain degree. (The difference between the heights of two objects is made smaller, and the objects are chosen from the same category and eventually on to different categories.) 1. Heights of the children themselves, chairs, desks and plants are compared. In every case J. and N. both understand such terms as "high," "low," and "same," however, they give answers only in one word. When the teacher tells them to repeat after him, "This one is higher," "This one is lower," etc., it takes them a while to deal with the terms: "low," and "same." ◦ In the case of H, at times he can't give correct answers when buildings and trees placed at some distance are compared. When other objects with the exception of the above are compared, he couldn't understand the meaning of "low" and "same at the beginning." But he gradually came to grasp them in the latter half. He can sometimes say the term "high."
(4) Dec. 12	◦ Through comparing the heights of two objects which are familiar in the children's daily lives, our aim is to inform them of how to use such terms as "high," "low," and "same." We also intend to enable them to distinguish which is higher or which is lower out of two objects in a picture. 1. By using three objects, with each one higher than another (A>B>C) to make them compare the two (A:B, B:C). (The

	difference within each pair is first made large and then smaller.) ◦ J. and N. can give correct answers without being puzzled even when the difference is made smaller. H. also answers correctly, however, is slower in reaction than in the previous situation, showing a puzzled expression. (We have to admit that we have not been really successful in this attempt. 2. The heights of two objects drawn on a piece of drawing paper are compared. (The pictures are picked up from what have been used in the TV program and in the lesson after the TV viewing.) ◦ J. and N. both can distinguish which is high and which is low in all situations, but H. is somewhat uncertain.
(5) Dec. 13	◦ Objects of daily use are chosen from wider range and hope to familiarize the children with the terms for comparing heights and to enable them to use them ("the highest," "the second highest," and "the lowest.") through the comparison of two or three objects. 1. Out of three objects with each one higher than another (A>B>C), A:B, B:C are compared respectively. Even though the difference between each pair is made smaller, H. has learned to answer correctly. 2. The heights of two picture cards are compared. H. is still uncertain in the case when the distance between the cards is made smaller. 3. The heights of three objects are compared. J. and N. know on the whole which is the highest, the next highest, the lowest; however, they cannot use the terms correctly. J. and N. practice how to give correct answers and pronounce the terms correctly in each situation, not only with three objects but also with two objects. K. attends the class again. (had to miss two to four hours due to special rehabilitation training.) When asked, "Which is higher?" she tries to answer with the movement of her fingers, but doesn't yet understand "height."

(6) Jan. 23	• Through watching TV and comparing the heights of two or three objects, both real and in pictures, our aim is to make them learn the comparison of heights, put it in order and confirm the use of the terms. 1. TV viewing 2. Guidance after the program. Evaluation. (cf. 5. Development of the Lesson with the Use of TV)

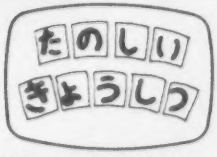
5. Development of the lesson with the use of TV

(1) Behavior of the children observed while watching the TV program at the introductory and concluding stages of the lesson.

Here we have described how the children reacted to the TV program at the introductory and concluding stages of the lesson.

* The scenes with double circle marks (◎) indicate the ones reproduced later into a re-edited program to be used at the concluding stage.
* Symbols to show the degree of concentration of the children while watching TV are as follows:
  ○ = much concentration
  △ = more or less concentration
  × = not paying attention to the screen
* Ⓣ shows classroom teacher's utterance

Introductory stage

Screen	How they react
 Ⓣ "We can't see the screen, J."	J. ○—Stands up. H. ○ N. ○ K. ×—○△×
	J. Dances. H. ○ N. ○ K. Waves her handkerchief.

Title; Which Is Higher?

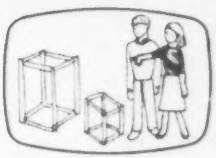
J. Says "This one," standing up.
H. ○
N. ○
K. Turns sideways and looks down.

Ⓣ "Look, she is so tall!"

J. Approaches the screen and points to the taller person. ×○
H. ○
N. ○
K. ×

Ⓣ "It's a fox, isn't it?"

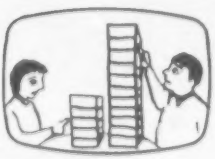
J. and N. laugh at the animals shown in animated films.
H. ○
K. ×

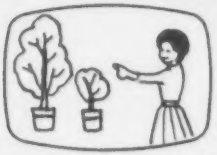
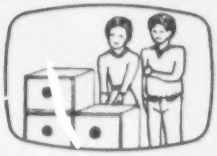


J. Stands up and points to the screen. ×○
H. ○
N. ○
K. ×

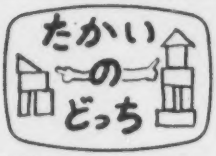
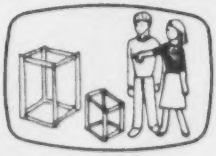
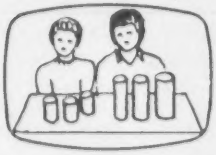
Ⓣ "Which is taller?"

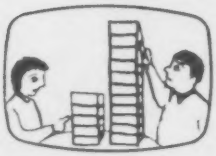
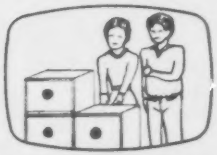
J. Approaches the screen and points to it.
H. ×○×—○
N. ○
K. ×

◎	J. ×—○—× H. ○ N. ○ K. ×
	J. and N. laugh at the doll which eats a lot. H. ○ K. ×
◎ Ⓣ "That's a potted plant, isn't it?	J. ○ H. ○ N. ○ K. ×
◎	J. Stands up and laughs. H. Jokingly collapses and laughs. N. Stands up, uttering "Look!" K. ×
◎  Ⓣ "What's that?"	J. ○ H. ○ N. ○ K. ×

	J. × Fidgets with his leg. ○ H. ○ N. ○ K. ×
◎	J ○ H. ○ N. Says "Tall." K. ×
◎ 	J. Approaches the screen, saying "High." H. ○ N. ○ K. ×
	J. × Rolls on the floor. ○ H. ○ N. ○ K. ×
Ⓣ "He got hurt."	J. × Lies on the floor. ○ H. × N. × Puts his hands on the floor. ○ K. ×
	J. ○ H. × N. ○ K. ×

Concluding stage

Screen	How they react
 Ⓣ "Which is higher?"	J. ○×○ Stands up and points to the higher one. H. ○× N. ○ K. ×○×—○×
	J. Points to her, saying, "Ado-chan." × H. ×○○ N. Approaches the screen and points to her. ×○○ K. ×
 Ⓣ Approaches K and speaks to her.	J. Approaches the screen and points. H. ○ N. Approaches the screen and points. K. ×
 Ⓣ Points to the TV screen and speaks to K.	J. ×○ Approaches the screen and points. H. ○ N. ○ Approaches the screen and points. K. ○×
	J. ×○—○ H. ○ N. ×○ Approaches the screen and points to it. ×○—○ K. Takes a breath. ×

 Ⓣ "What are they doing?"	J. ○ Says "Water." H. ○—×○ N. ○ K. ×
	J. Laughs, uttering, "Look!" H. Laughs. N. Laughs, uttering, "Ah, ah." K. ×
	J. and N. Stands up and points to the object, saying "This one." H. ○ K. Groans.
 Ⓣ "You have your height measured at the school clinic, don't you?	J. ○—×○ H. ○×—○ N. ×○ K. ×
 Ⓣ "That's right. This one is high."	J. Points, saying "This one." ○ H. ○ N. Points, saying "This one." ×○ K. Holds out her hand. ×

(2) Actions and Reactions of the Teacher and the Children After the TV Viewing (Introductory stage) T=teacher

T. "O.K., everybody, let's play with colored blocks!" Brings out the blocks.

J. Takes the blocks.

H. 〃

N. 〃

T. Starts piling them up, saying "Let's pile them up!" Piles them high.

J. and N. Go and get the blocks.

K. Taps on the tambourine alone, isolated from the others.

T. "Let's see who can pile them highest?"

J. H. and N. Continue piling them up. (N. piles the highest.)

K. Plays on the toy piano.

T. "Now, who's got the highest?"

J. Holds up his hand, saying "Here!"

H. Points to his pile. (His is the second highest.)

K. Loafs around, striking at the toy.

T. "Is J's the highest?"

"H, whose is the highest?"

"N, whose is the highest?

"It's N's, isn't that right?"

J. Lets the pile fall down and rejoices with exclamation, "Wa!"

H. Looks up to the tall pile.

T. "Then, I'll start piling them the highest!" Starts piling them up.

J. "You're mean, Mr. H."

T. "Will you hold it for me?"

J. Holds the pile.

T. "Thank you." Continues piling up even higher. (Approximately to the height of 2 m 30 cm.)

H. Hands a block to the teacher.

N. Stares at the towering pile with an impressed look.

T. "Oh, no." The pile falls down.

J. Knocks down the rest of the pile and laughs "Wa!"

T. "It's dangerous. So let's stop doing it."

H. Starts to take the blocks away.

T. "Now let's compare our heights." Calls J. and lets him stand next to him.

J. Goes to the teacher and stands next to him.

T. "Which of us is taller, J. or I (the teacher)?"

H. Points to J. and the teacher.

N. Says "Mr. H," and points to him.

T. "That's right." Looking at H, asks him "Which is taller, J. or I (the teacher)?"

H. Points to the teacher.

T. "Next, come here, J.," Goes to the shelf beyond the curtain. Climbs up to the top of the shelf 1 m 60 cm high.

J. Stands on the floor with his face shown but the rest of his body is hidden behind the curtain.

K. Now and then glances at her friends.

H. and N. Stare at the teacher with a surprised look.

T. Stands up on the top of the shelf, which makes him as high as 3 m 40 cm (almost reaching the ceiling). With his body hidden behind the curtain, shows up his face only and asks the children, "Which is higher, J. or I?" Laughs.

H. Points to the teacher.

N. Says "Mr. H."

T. "You're right. You want to come up here too?" Pulls J. by the hand. They fall down together.

T. "O.K., J., you go up on the shelf."

J. Is helped to stand up on the shelf behind the curtain. Shows up his face only out of the curtain.

T. Stands on the floor, showing up his face out of the curtain. (Lower than J. by about 80 cm.) "Which is higher, N.?"

J. Laughs, "Heh, heh."

N. Says "J."

K. With a handkerchief in her mouth, comes to where everybody is.

T. "J. is. But J. is standing on top of the shelf." Pulls back the curtain. "See, there's a trick here." Carries J. down to the floor.

T. "Now, shall we compare our heights with our friends?" Calls J. and H. and lets them stand side by side.

J. Stands next to H.

H. Stands next to J.

T. "N., which is taller?"

N. Answers, "J."

T. "That's right! Very good! K., come over here." Calls K. "H. and N., stand next to each other."

H. Stands next to N.

N. Stands next to H. Cries, "Ah, ah!"

T. "J., which is taller, H. or N.?"

J. "N."

K. Stays close to her friends, but doesn't pay attention to them.

T. "N.? Yes, you're right. H., come on." Lets J. and N. stand side by side.

J. Stands next to N.

N. Stands next to J.

T. "H., which is taller, J. or N.?

H. Points to J.

T. "O.K., but what's his name?"

H. "J."

T. "You did a great job! Look, there's very little difference between them.

J. "K."

T. "Let me ask K. too." Lets J. and H. stand side by side and brings K. into the group. Asks, "K., which is J.?"

K. Uttering "Eh?," is brought to the teacher, but doesn't respond.

T. Sings. "K., K., here's J.," Claps his hands and touches J. Holds K's hand and lets her touch J, tapping him with her own hand.

J. Looks at K., smiling at her.

K. Is led by the teacher and made to touch J.

T. "Now K., which is H.?"

K. Doesn't answer.

T. Sings, "K., K., here's H." Claps his hands and touches H. Lets K.

do the same.

K. Claps her hands for a little while as told by the teacher. Is led by the teacher by the hand and taps on H. lightly. Waves about her handkerchief and looks down.

T. "K., which is taller?"

J. Without waiting for K's reaction holds K. by the hand and leads her to touch himself.

H. Smiles.

K. Is held by J. by the hand and touches J.

T. "This one? Yeah, that's right. J. is taller, isn't he?" Clearing up the toys.

(3) Actions and Reactions of the Teacher and the Children After the TV Viewing (Concluding stage)

T. "Let's compare our heights." Lets J. and N. stand side by side.

J. Stands next to N.

N. Stands next to J.

T. Asks H.

H. Points to J., saying "J."

T. Asks K. with singing, "K., K."

K. Standing a little apart from N. and J., swings her wrist toward J. and also toward N.

T. "Yes, J. is taller, isn't he?" Holds K's hand and lets it touch J. Leads K. and H. to stand side by side. Asks J.

J. "H."

T. Asks N.

N. "H."

(The comparison of the heights of two or three piles of colored blocks)

J. Understands when told "the highest," "the next highest," "the lowest," but cannot say them.

H. Cannot answer. Looks puzzled.

N. Can distinguish "the highest," "the next highest," or "the lowest," but cannot answer properly.

(The comparison of the heights of the desks with a difference of

2~3 cm in their heights.)

T. "Which desk is higher?" "J.?"

J. Says "This one," and points to the higher one.

T. "N., how about you?"

N. Says "This one," and points to the higher one.

T. "How about you, H.?"

H. Keeps quiet for a while, looks at the desks, points to the lower one. Is uncertain.

T. "K.?" Sings "K., K., here're desks, K., K., which is higher?"

K. Taps on the higher desk, but also taps on both of them. Is uncertain.

(The comparison of the desks. This time to point out the lower one.)

J. Says "This one" and points to the lower desk. Repeats, "This one is lower," after the teacher.

H. Keeps quiet and points to the lower one.

N. Says "This one," and points to the lower one. Repeats, "This one is lower," after the teacher.

(The comparison of the plants in pots drawn on cards—the higher and the lower as the theme. The difference in height is about 5 cm.)

J. With "the higher" concentrates well. Answers "This one."

H. With "the higher" concentrates well. But just points to the higher one.

N. With "the higher" concentrates well. Answers "This one."

K. With "the higher" quite confidently taps on the higher one.

J. With "the lower" concentrates well and answers "This one."

H. With "the lower" is uncertain.

N. Answers "Low."

K. Wouldn't pay attention to the objects. Is uncertain.

(Also with picture cards, the comparison of the levels of juice in three glasses; differences are 2~3 cm.)

J. When asked which is the lowest, the next lowest, the highest, can answer them but cannot say them properly. Is led to repetition practice of the phrases.

H. Utterly puzzled and cannot give any answers. Just repeats what the teacher says.

N. When asked which is the lowest, the next lowest, the highest, can answer them but cannot say them clearly in words. Is led to repetition practice of the phrases.

(At the school clinic, measure their heights on the height scale.)

T. Measures each child and tells him (her), "x cm."

J. Looks proud.

H. Looks serious.

N. Smiles.

T. Tells them that a special apparatus is used for measuring height and reminds them of monthly measurement of their heights at school.

(4) Reflections on the Lesson

1. Introductory Stage of the Lesson

A. On TV Viewing

a) The Children's movements while watching the TV program were quite active and lively, which probably means that they had already learned the lesson of comparison by that time as they had had several lessons on comparing spaces. For example, J. and N.. when the TV asked them a question, "Which is higher?", rose to their feet immediately, approached the screen and pointed to the higher object. Thus they reacted quite positively.

b) The teacher intentionally gave as few directions as possible, but on the other hand, in order to appeal more strongly to the children, there could have been better ways if we had provided them some opportunities to learn by their own experiences.

B. On the Guidance Given after the TV Viewing

a) It was a good idea that the children went on to the comparison of heights by piling up the colored blocks using their own hands. The comparison was made among three piles. However, the comparison between the two should have been done first, and eventually on to the three.

b) Since our first aim of this lesson is to make the children realize by their own senses and feelings what it is to be "high," we ought to have given more examples of extremely high objects

restricted to fewer categories rather than just giving examples using various objects with comparatively little difference in height. In the case of using colored blocks, it would have been more effective if we had built a very high pile at the very beginning.

c) Speaking of K., who was walking about tapping on the tambourine, we were hoping she would join voluntarily in the activity of piling the blocks with other members; therefore, the teacher purposely didn't try to do anything special in order to attract her attention.

d) When the children piled up the blocks, it might have been more helpful if the teacher had reacted with more exclamatory expressions like, "Wow, you've piled so high!"

2. Concluding Stage of the Lesson

A. On TV Viewing

The children were watching TV comparatively well, concentrating just like at the introductory stage of the lesson. N. was responding well moving his body to the question "Which is higher?" given by the TV. K. glanced at the screen more frequently than before.

B. On the Guidance Given After the TV Viewing

a) The contents of what they have learned varied according to the level of each child. It could be explained that because we had checked beforehand the differences in their abilities, we had set up a different goal corresponding to each child. On the other hand, this trial resulted in a rather all-round type of lesson. We should have set a more specific goal for the purpose of bringing about a more organized lesson.

b) The reason for introducing the height scale is that we meant to present to the children an object very familiar at monthly checks of heights so that what they had learned in the TV program would not remain just a concept but as something practiced in their daily lives. Regret to say, however, it did not turn out to be successful as something significant in the whole context

of the unit.

c) As to the use of the program to serve as a review of the unit of the lesson, there are some disadvantageous factors in the organization of the program. We hope to find solutions for our future guidance.

6. Evaluations

(1) Concerning Our Aims

a) Speaking of our purpose of making the children conscious of and interested in "height" through comparison of heights, J., H., and N. can be considered to have fulfilled our purposes. But in the case of K, what we did for her was not satisfactory. That is, so far we have only learned by experience what should be done in the next step.

b) As for our next goal, that is, to make the children familiar with the terms of comparing heights to a certain degree and also to use them correctly, J. and N. can use them almost perfectly, but H. hasn't yet learned to manage such terms as "low" and "same." None of them have thoroughly learned to say such phrases as "X is higher," or "X is lower."

c) As to one of our aims that the children understand which is higher in comparing objects familiar in their daily lives, J. and N. have reached the stage of being able to distinguish the higher one out of the objects with little difference in height, of different categories, and even when the two objects are placed apart with a certain distance in between. As for H., he has not reached the stage of being able to distinguish the higher one out of the objects of different categories and when the two are placed apart with a certain distance in between.

d) In the comparison of three objects, we started with the comparison of two objects, that is A>B, and B>C first, and then went on to that of A>B>C. By this trial, the children seemed to be a little puzzled at first. However, every child with the ex-

ception of K. has gradually learned.

e) In the case of K., we had meant to interest her in comparing things and make her conscious of "height" to a certain extent, but we were not quite successful in this experiment.

(2) On TV Viewing

1. On the teacher's guidance at the time of TV viewing

When we take into consideration the speed with which the children can follow what is going on, the program develops so rapidly that we feared our directions given while they were watching might interfere in their learning process. Therefore, while they were watching TV, we tried to let them concentrate on the TV screen as much as possible. We thought their actions and reactions at the time of TV viewing would indicate how much they have acquired respectively and would be instructive to our future activities. We tried to give as little guidance as possible while the program was on. But on the other hand, when some noteworthy scenes came up on the screen, I do not think we gave appropriate comments on the spot in order to stress the points.

For instance, during the TV viewing at the introductory stage of the lesson, in order to attain our goal of making them interested in and conscious of "height," the teacher should have repeated "Isn't that high?" at each spot when necessary.

2. On educational TV programs and picture cards

I had assumed that the lesson with the use of TV and picture cards was merely a subsidiary method to the original purpose of educating children to deal with real objects in their lives. But when I realize how frequently the children of today come in contact with televised signs and symbols in their everyday lives, and more so in the future, this method of studying seems to be not only a mere process but something that plays an important role in their education.

We spared only two hours for the lesson with the use of picture cards, but more time should have been spent.

3. On the TV viewing at the introductory stage of the lesson

a) As a whole the children concentrated quite well. Some of them were so interested that they even approached the screen and responded to the questions by pointing to the higher object.

b) Looking at the report on how the children reacted to the TV program, we can say that the merits of TV have wholly been made the most of to attract their attention—music, attractive colors, simplified materials which are easy for them to understand and close at hand in their daily lives, the repetition of scenes for the purpose of emphasizing important points of study, various ingenious devices of TV techniques which make the contents more colorful and entertaining and easier to understand.

4. On the TV viewing at the concluding stage of the lesson (Re-edited version of the program featuring only the comparison of heights.)

a) K. began to pay attention to the TV screen much more frequently than at the introductory stage, and also each span of viewing time became longer.

b) It is true that members of the staff have spent much time and effort in recording and re-editing the program, but aside from that I think the children themselves have learned the lesson quite effectively. At the same time, our goal of teaching them the theme of the unit was attained by the use of the specially reproduced program.

c) Thanks to the repeated lessons with the use of TV, the children have come to take more interest in TV itself. The more frequent approaches to the TV screen indicated their further understanding of the terms used for comparison of heights.

d) In the course of the lesson, we meant to teach them such terms as "low" and "same." However, the TV program itself

did not present those terms frequently enough; therefore, it did not serve well as a summary of the unit as much as we had expected.

5. On a Trial Method Adopted in the Lesson〉

Because we wanted the children to concentrate visually and think by themselves, we made a trial of cutting off the sound of TV leaving only the visual source of instruction.

Table: Changes observed in behavior during the program
(for the part of comparing heights, lasting 10 minutes)

TV	Names / Behavior	J	H	N	K
(with sound on)	Stands up	(5) 5	(0) 0	(1) 5	(0) 3
	Approaches the screen	(2) 5	(0) 0	(0) 5	(0) 3
with sound off	Points to the screen	(4) 5	(0) 0	(0) 5	(0) 3

Out of the 20-minute program, we made this trial lasting for 10 minutes. Please refer to the descriptions on the children's behaviors as shown in the table above. The numbers in the parentheses indicate the times with the sound on. The characteristic points in their reactions observed while watching TV with the sound off are as follows:

a) They were relatively more interested in watching TV.

b) When they have reached the point of understanding, they obviously show it in action. (Approaching the TV screen, pointing, repeating phrases, etc.) This probably owes much to the benefit of their watching the same program for the second time; however, cutting off the sound helped them much to think by themselves. In this sense, this trial can be considered a success.

c) In the case of TV viewing with the sound on, all of them watched quietly. They murmured with each other in low voices or with hand gestures.

(3) Opinions on the Program

a) It might have been more effective if the animated films had stuck all the way to the theme: comparison of heights.

b) The TV techniques were effectively used so that the children were attracted much in the following scenes: when a short person suddenly grew taller by putting cans beneath his feet, the gradual movement of the TV camera covering from the top to the bottom made the children think and discover by themselves why he has become taller so suddenly; in another scene where a person is watering a plant in a pot, he waters it so much that he gets drowned at the end. These tricks could not have been possible without the ingenuity of TV techniques.

c) In the scene where they compared the piles of colored blocks, we should have used different colors for the higher and lower piles respectively. The background should have been painted in such color that there would have been a clearer contrast to the piles.

d) The program proceeded too rapidly. The performers of the program spoke too fast.

e) It might have been better if in the program there had been presentations of the word "low," its concept, comparison of three objects, and of comparison of objects placed apart from each other.

7. Discussions of the Co-workers

A.

It can be said that today TV has penetrated into the life of every child, and therefore we think it quite natural that TV be utilized in their educational methods. However, when we make use of TV, we had better reevaluate from a scientific viewpoint all the possible effects of TV on the children of various characteristic traits. That is, with the combination of sight and sound TV can provide different types of incentives to suit the level of

each child's ability of sorting out necessary information for himself.

We cannot deny the fact that TV is one of the most influential factors in children's growth, but we must remember that it serves as a "non-responsive environment," and therefore it should go hand in hand with other "responsive environments."

When we pursue as to when and how the means of giving out information by TV can contribute to the children's learning process, we'll have to make much of the studies based on facts. Now it is time for us to give opinions based on actual data rather than discuss the virtues and vices of TV just as a topic to be discussed theoretically. For this reason, the use of TV in class will be an important object for our future studies, but basic analyses should precede it by all means.

B.

(1) Progress in the ability of TV Viewing

Out of the four children, K. ended up watching it fragmentarily all through the program. She was either glancing at the screen now and then or absorbed in doing whatever pleased her own interest.

Speaking of H., he behaved well as a whole, but his attitude was passive and we observed changes in his expression only in the scenes which seemed to attract his attention.

Both J. and N. willingly watched TV and reacted to the screen quite positively.

We could well expect these differences in their reactions, but we consider that our guidance with the use of TV will make an improvement; that is, from the level of K. to that of H., from that of H. to N. and J.

(2) The Effect of Continuous Viewing of TV

The continuous watching of TV is an influential factor for the improvement of their viewing attitude. In order to make this more fruitful, teachers and parents should get in closer contact

with each other and carefully select such programs as they judge to be the most appropriate. If the parents as well as the teachers watch the program at home and give frank opinions concerning the teaching methods, it will help them improve their own ability in watching TV.

(3) The Content and Structure of the Program

I'm quite impressed by the TV techniques of producing the program taking up such materials as are ordinarily hard to be introduced in TV. However, it will be better if those series of programs are reproduced into separate ones according to each level of the children and thus serve as video-taped materials for classroom lessons.

C.

(1) In this trial lesson for our study, we took advantage of the merits of TV at its introductory and concluding stages, and especially at the latter stage, we made full use of video-taped materials specially rearranged and reproduced for the lesson.

It has not yet been made clear whether or not the program was suitable and effective, but this experimental lesson is noteworthy. In the future when we use TV in class for handicapped children with various kinds and degrees of disability, we should thoroughly check the content of the program and consider whether it will benefit them or not before we decide on taking it up.

(2) According to the survey on the attitudes of children before and after the TV viewing, we don't see any obvious direct influence of TV. To the question "Which is higher, K. or the teacher?" the children answered, "K." And also to the question, "Which is higher, the teacher A or the teacher B?" they answered "Same."

Thus they are still somewhat uncertain in their understanding of height. This means that TV viewing and their own specific experiences should work together and that repeatedly.

(3) At the concluding stage, the children made noticeable

reactions to TV, which is a matter of interest to us. Positiveness in their behavior serves as a barometer for judging to what degree they have grasped the content. It can be considered as one of the fruitful results of the lesson.

(4) At both times of TV viewing, the children seemed to be concentrated on the screen and to have grasped the content. We paid attention to the fact that K., who is seriously handicapped, kept seated all through the program even though she was not always watching the screen. Now we are presented with new questions to be solved as soon as possible: To what extent seriously handicapped children can recognize televised visions; How the programing should be done to precede the stage of TV viewing.

D. Production Staff of the Program

Isn't TV a means of reconfirmation rather than one to convey a new concept? This is what I strongly felt while observing the lesson. In other words, children cannot receive any more information than within the limit of their own abilities. The reason for this comment of mine is: in the first place, as to how much the children grasped the concept introduced in the program, there wasn't observed a remarkable difference between the surveys carried out before and after the TV viewing; secondly, even in our experimental method of TV viewing with the sound off, the children who had shown signs of understanding at the time of TV viewing with the sound on, reacted as well being able to recognize which is higher even when they were not verbally questioned "Which is higher?"

All the members of our production staff must admit that there do exist, to our disappointment, the limitations of such a medium as television which is characterized by a series of flashing visions one after another. TV, after all, is nothing but a copy of reality. It seems to us that the proper role that TV can play to contribute to the children is to let them experience a once-acquired concept (reality) for the purpose of reconfirmation.

If all the teachers who are engaged in this field of special education take up this TV program "Joyful Classroom," keeping in mind those specific points that I have just mentioned here, I believe the children will literally have their own "joyful classroom," and that is exactly what this program deserves.

This study was made under the cooperation of the following members:
Classroom teacher: Hiroshi Hayakawa
Cooperators: Chiyoko Terayama, Kōichirō Fujiwara, Katsumi Oguchi, Masafumi Kotaka.

This report was prepared by Kōichirō Fujiwara, Principal, Seibi Nursing School, Suginami Ward, Tokyo.

2. Using TV Science Programs in the 3rd Grade of the Junior High Division

—The Yamagata Prefectural School for the Deaf—

1. **Theme:** "The digestion of food" by NHK TV program "The Human Body and Nutrition" produced for the 6th grade science class

2. The actual condition of students

(1) The class consists of seven boys who are in the 3rd grade of the junior high school division of the Yamagata Prefectural School for the Deaf.

(2) All of the students are natives of Yamagata Prefecture. Two of them attend school from Yamagata City and the rest lodge at a boarding house named "Aotori Gakuen"

(3) Their nature is generally meek, cheerful and frank. But they lack patience and they do not study at home of their own volition.

(4) Their level of reading ability is just about the 4th or 5th grade level of elementary school except one whose reading ability is limited to the 2nd grade level of elementary school.

(5) They were divided into two classes (A and B) according to the progress level till 1975, but the two classes have been combined as a single 3rd grade class since 1976.

(6) There are considerable individual differences in their understanding, volition, attitude and linguistic faculty among them. The aspect of their learning activities is as follows;

Name	Hearing level		Intelligence (Standard Score)	Learning activity
	R (dB)	L (dB)		
1. K.M.	90	78	51	Studies willingly, but has difficulty in understanding the point of a subject.
2. K.H.	83	86	54	Studies actively and voluntarily, but is not self-composed.
3. S.M.	118	95	54	Speaks and acts positively, but has an uneven temper and some weakness in character.
4. T.T.(1)	57	66	43	Power of hearing is good. Speaks often and pretends to understand, but comprehensive faculty is poor.
5. S.K.	99	105	21	Studies earnestly and patiently, but basic achievement is poor.
6. T.T.(2)	82	91	51	Is interested in studying, but is moody.
7. S.N.	69	80	40	Has an uneven mind. Can understand only partially.

3. The reason why this program was selected

This class has been watching the program series "The 6th Grade Science Class" continuously since April.

Reasons are as follows;

(1) Rich content.

(2) The program is made to adapt to steps of students' ad-

vancement and so the contents can easily be understood and studied.

(3) Students can observe many experiments which are hardly experienced actually at school and which can help to enlarge the sphere of students' experience.

(4) The program is composed in such a way as to arouse students' interest, concern or volition, for example, having them think "Why...?" "Well, I see..." "It's interesting." and "Let's try"

(5) Most of this series present the way of studying how to find solutions to various problems.

The objectives of study through TV viewing are as follows:

(1) To develop students' audio-visual faculty and have them master how to solve problems as well as to find the right way of looking at or thinking out things.

(2) To achieve effectively the objectives of a study unit, by using TV programs properly in the curriculum.

(3) To increase the learning volition through continuous use of the programs.

4. Teaching Plan

	Duration (hour)
(1) The human digestive organs	1
(2) The digestion of food	
a) TV Science Class program "The Human Body and Nutrition"	2 (this is the first of the two hours lesson)
b) The starch is changed to sugar by saliva.	1
c) Digestion of protein and fat	1
(3) The absorption of digested food	1
(4) The effect of absorbed nutriment	2
(5) The relation with other internal organs	1

5. The objective of this lesson

To have students understand that sugar digested by digestive ferment are absorbed in the wall of the intestine, through the TV program and model experiments.

The subordinate objectives follow:

(1) To have students understand that the nutriment in the egg-yolk and the egg-white is carried by the blood and absorbed in order to grow the embryo of the chick.

(2) To have students understand that it is necessary for the human to get the nutriment in his body in order to live like an egg.

(3) To have students presume and understand that the food materials taken in a body are chemically changed into various forms and absorbed in the intestine.

(4) To have students understand the outline of the subject matter of TV images for themselves with the help of key words.

(5) To have students presume from the result of a model experiment that there are invisible tiny holes on the wall of the intestine.

(6) To have students presume the process in which the sugar is absorbed from the wall of the intestine, using TV images and a model experiment.

6. Process of teaching

Practical objectives	Time (minutes)	Study activity	Points to be noted in giving guidance
1. To have students summarize and report what they have studied.	5	1. To review the last lesson. ◦ From where is the necessary nutriment taken in order	◦ To have students understand it completely because it forms the basis for this lesson.

		to grow the embryo of the chick? ◦ How is this nutriment given to the embryo? ◦ What kinds of the digestive organs do humans have? ◦ From where is the necessary nutriment absorbed into the body?	◦ To let them have some questions about the blood carrying the nutriment and how the nutriment is taken into the blood. ◦ "The digestive organ" was studied in the 5th grade; however, students seem to have forgotten about it. So we teach it fully.
2. To have them presume based on the question presented.	5	2. To grasp the key of this lesson. ◦ When we eat nutritious food, is it excreted in the intestinal discharge without any chemical changes? —It is changed into another thing. ◦ What is the starch changed to? ◦ What changes the starch?	◦ To present an easy question as a key of this lesson. ◦ They seem to be able to presume that the food is chemically changed. ◦ They seem to remember that the starch is changed to sugar because they have studied "mold".
3. To have them grasp the objective of this lesson.		3. To understand the objective of this lesson. ◦ Is the starch which is taken from the mouth —affected by what?	◦ To pay full attention to have them understand that the objective of this lesson is in watching the TV program.

		—changed to what? —absorbed from where to where? ◦ And why?	
4. To have them watch the TV program by checking the contents of TV images for themselves.	20	4. To watch the TV program "The Human Body and Nutrition."	◦ To distribute a printed sheet giving the contents of screen images and have students check whether they can understand key words or not. ◦ To have them understand the relation among image sequences.
5. To have them summarize and express their own opinions.	5	5. To discuss contents of the TV program briefly. ◦ What is the starch changed to? ◦ What changes the stach? ◦ Into where is it absorbed from the small intestine?	◦ To confirm how much they understand the subject by watching the TV program. ◦ To ask questions to all of them.
6. To have them presume the process that the nutriment is absorbed into the wall of the intestine, through screen images and the model experiment demonstrat-	5	6. To think about the reason why the starch is changed to sugar and absorbed. ◦ Observing the model experiment by a teacher and recalling the con-	◦ To put importance on the grasp of the subject in this class. ◦ As the diffusion of ammonia gas was previously studied, the digestion and absorption is explained by the idea of a

ed by a teacher, and to have them grasp the next theme of study.		tents of the TV program, to presume the reason. ◦ To understand the next theme of study.	molecule.

7. Evaluation

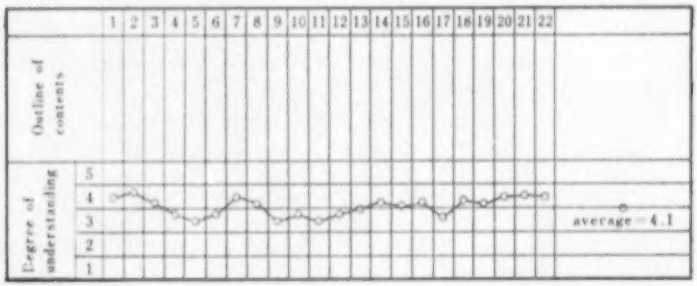
(1) Did students watch the TV program to see if they could understand the contents of TV images?

To have students read a printed sheet outlining the subject before watching the program so as to gain a grasp of the content. Then, to have them check if they could understand TV images while they were watching the program.

The average extent of understanding by self-evaluation is as follows;

Average Degrees of Understanding by Self-evaluation

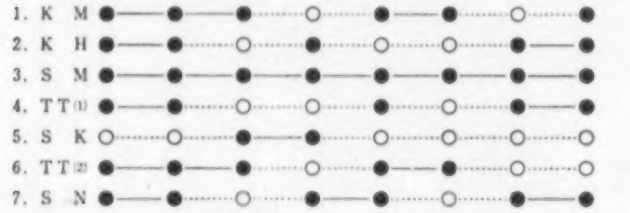
(5-rank rating)



(2) Could students understand the process of the content of images?

We divided "The Human Body and Nutriment" into eight parts. And after watching the program, we had them try to grasp the process.

The result is as follows;



(3) Could we achieve the objective of this lesson effectively?

We have put emphasis on the formal evaluation. We have set up specific objectives in order to grasp the condition of students' activity accurately. We have set up check points for evaluation during class-work.

8. Problems (tasks)

Problems can be summarized into the following three points;

(1) How to give a point of view for watching the TV program.

(2) What supplementary means should be devised during watching the TV program.

(3) How to develop guidance after watching the TV program.

This study was made by the following member.

Classroom teacher: Kōichi Murakami

This report was prepared by Shigeyuki Tsuzuki, Research Assistant, The University of Tsukuba.

V. Retrospect and Prospects

Shigeo Ōuchi

This booklet was designed to introduce to countries other than Japan some of the result of studies made by our *Hō-Toku-Shin* research group concerning the production and use of radio, television and video-tape media in the education of handicapped children in Japan. *Hō-Toku-Shin* is, as mentioned in the preface to this booklet, an abbreviation of the Japanese title of our research project meaning the promotion of education for handicapped children through the use of radio and television.

As it was presumed that the background of our studies is not well known in foreign countries, the Introduction was prepared in brief to furnish necessary basic information as to the past and present state of affairs in the education of handicapped children in Japan, the current radio and television programs produced and broadcast by NHK (Japan Broadcasting Corporation) for the education and welfare of the handicapped and disabled, and general trends in the use of educational programs in Japanese schools for the handicapped at the present time.

The body of this booklet was divided into three parts: the first part dealing with the results of a survey on the use of school broadcasting programs in the education for handicapped children; the second part reporting briefly one of our experimental studies on the production and viewing effects of video-taped instructional materials; and the third part which summarized two of our field studies on classroom teaching with the use of educational television programs conducted in various schools for the handicapped all over Japan. It is to be regretted that only a small portion of our six-year studies has been included in this booklet because of budgetary limitations, but we hope to edit and

publish the second volume of this English version in a bigger style and including more studies if budget permits in the near future.

The use of educational programs, especially television programs, has greatly spread among schools of all grades, from kindergarten to senior high throughout Japan, and schools for handicapped children and youth are not an exception. NHK has been producing and transmitting the largest quantity and the best quality of educational radio and then television programs of all the broadcasting stations in the world, and Japan is the first country in the whole world that was favored with educational television programs especially designed and targetted for mentally retarded children. This fact is a cause that urged us to launch a research project, as there were not a few problems to be solved both in the designing of special programs for the handicapped on the part of producers and in the use of these special programs as well as of other general programs intended for ordinary school children on the part of classroom teachers. The reader of this booklet might have got some idea from the table of contents introduced in the Preface of what problems we have challenged for the past six years.

We are glad that we have been sucessful in solving some of the problems, but the solved portion of problems is regretfully small and moreover, we have found not a few unexpected new problems in the course of serial studies. Recently, especially since compulsory school education for such handicapped children as the mentally retarded, the crippled and the invalid was effectuated in 1979, the number of profoundly handicapped and multi-handicapped school children has greatly increased in every school. Among those severely handicapped children not a few have been found quite reluctant to watch television or showing neither interest nor understanding of what is on the television screen.

So we have been confronted with a new problem of how we can keep those profoundly handicapped children seated in chairs in front of the television set or induce them to turn their eyes

to the television screen even for a short time. Among other new problems are how effective educational television programs are in promoting an integrated education of the handicapped and the normal, what kind of programs are most useful in the early treatment of handicapped infants, what role the use of telecast programs and closed-circuit television can play in the guidance of Nursing and Training (*Yōgo-Kunren*) domain, which format of programs is more effective in the vocational education for each kind of handicapped children, and so on. We intend to continue and develop our group studies in order to solve these new problems as well as the old ones one after another.

Last but not least do we earnestly hope to establish contact with researchers and research organizations, producers and broadcasting stations of educational programs, and teachers, schools and schools boards of education in other countries that are interested in the production and use of educational programs or other audiovisual media in the field of education for the handicapped. We shall be very happy if we can go ahead with our studies exchanging necessary information and important findings on a world-wide scale.